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COMPUTERWORLD

Inside

GLOBAL NETWORKING
MCI and BT will form a $1 billion venture to offer one-stop global network sbopping. *Page 1*

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DEC executives will attend tbe DECUS meeting in a bid to gauge customer mood and concerns. *Page 15*

SECURITY FLAP
Government officials say recently proposed encryption technology is unlikely to be forced on users. *Page 21*

SMITHSONIAN AWARDS
The annual *Computerworld* Smithsonian Awards are given to organizations using computers to improve society. This year's finalists help disabled children, research human origins, fight disease and engage in other noble pursuits. Stories begin on *page 85*.

Client/server fallout

Need for central IS grows

By Nell Margolis

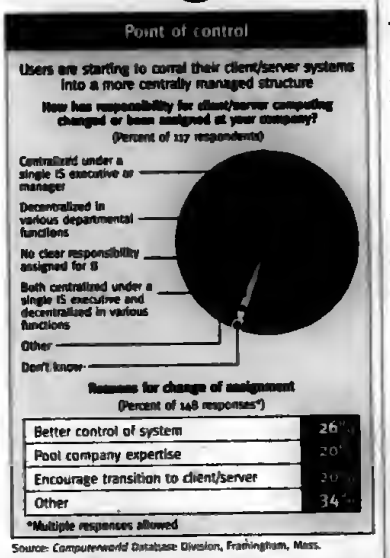
■ Client/server computiag, oftea viewed as siphoniag clout away from corporate information systems departments, may ia fact be pumping power into a new kind of centralized IS structure.

So said more than a dozen users and industry observers who last week revealed a trend toward recentralization of IS services at large companies, driven in part by the demands of client/server systems. It is a trend corroborated by a survey of more than 100 IS professionals at midsize and large companies (see chart).

"I've always thought that either extreme — centralization or decentralization — makes no seose," said Du Wayne Petersoo, former Merrill Lynch & Co. chief information officer and current chairman of Du Wayne J. Petersoo Associates in Pasadena, Calif. "You've got to have some of both."

Nothing, he said, hammers tbe coondrum home more sharply than client/server. On the

Central IS, *page 16*



Source: *Computerworld* Database Division, Framingham, Mass.

Vendor allies seek to boost wireless LANs

PC Expo announcement may aid interoperability

By Lynda Radosevich and Joanie M. Wexler
CALABASAS, CALIF.

■ The proprietary world of wireless local-area aetworking could finally crack open later this month when a group of vendor heavyweights publicly backs a common wireless LAN protocol.

A consortium of networking, chip and desktop vendors plans to make a pitch for wireless interoperability on the eve of PC Expo, which opens June 28 in New York. The goal is to allow users to mix and match various vendors' wireless LAN adapters — including credit-card-size Personal Computer Memory Card International Association interfaces — as they do today in the wired LAN world.

The group is spearheaded by laptop connectivity vendor Xircom, Inc. here and includes chip maker Advanced Micro Devices, Inc. Also strongly considering backing the protocol to circumvent sluggish standards activity are Compaq Computer Corp., Dell Computer Corp., NEC Corp. and Suo Microsystems, Inc., Xircom confirmed.

However, Phil Belanger, Xircom's director of marketing for wireless products, noted that some of the negotiations are not yet final.

Vendor allies, *page 14*

Novell boosts management

Revamped NMS adds remote monitor, tighter integration

By Elisabeth Horwitt
PROVO UTAH

The next version of Novell, Inc.'s NetWare Management System will have the standards support, integrated applications and price/performance it needs to compete with offerings from the likes of Hewlett-Packard Co. and Sun Microsystems, Inc. in the eoterprise network management arena. It is expected to debut at Interop '93 in August.

The current NMS product, NetWare Services Manager Version 1.1, is primarily suited to managing individual NetWare local-area networks. Version 2.0, however, will be much closer to Novell's original promise, more than a year ago, of a multivendor, distributed, eoterprise network management platform, according to sources close to the company.

Key enhancements to Version 2.0 include support of the Simple Network Management Protocol Remote Network Monitoring, or RMON, standard, tighter handling of applicatioos for managing different types of network systems and centralized management of multiple remote LANs and servers.

All this will be offered at a price significantly lower than either the current NMS or compet-

Novell, *page 12*

Data processing vs. the 'bean counters'

Faster product cycles at odds with accounting rules

By Mark Halper

Meet technology's latest albatross: product depreciation schedules.

With vendors injecting new wares into the market at burstmode speeds, informatioo systema chiefs are trying to convince their financial officers that typical five-year and longer depreciatioo cycles are not appropriate anymore.

Instead, users are advocating two- and three-year periods and, in some cases, are suggesting that equipment come off the books after a year — a process known as fully expensing.

"We've radically adjusted our depreciation schedule," said Jerry Kopecky, manager of MIS operations at IVI Travel, Inc. in Northbrook, Ill., which now has a three-year cycle. "You have to be crazy these days to have a depreciation cycle of five years on a CPU."

And IVI Travel may not stop at three years. "It's at three right now, but for things

Bean counting, *page 24*

Source: Computer Economics, Carlsbad, Calif.

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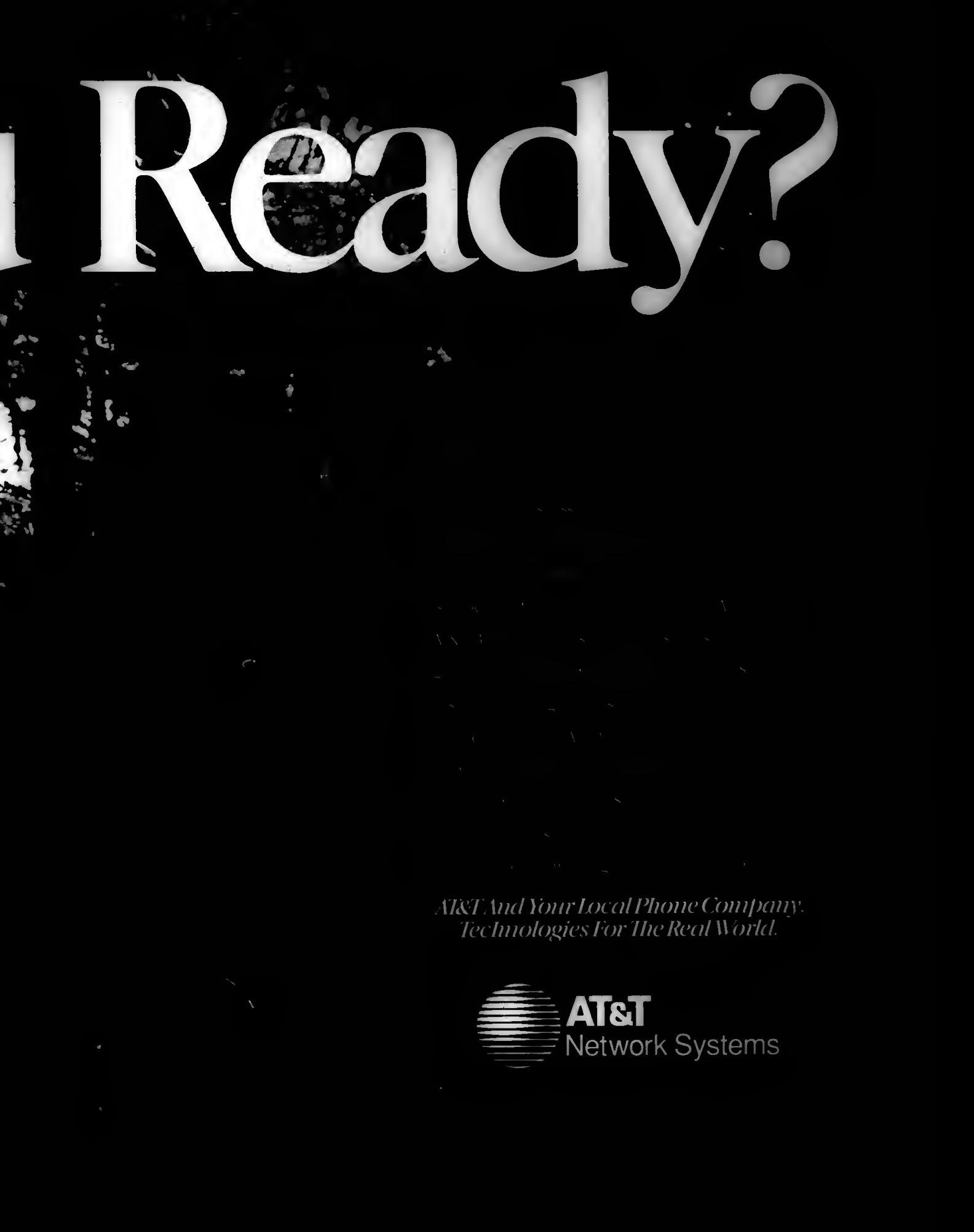
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AT&T And Your Local Phone Company.
Technologies For The Real World.
AT&T
Network Systems

Recent events suggest the administrative burdens of your network could grow substantially.

Gerald Verchick helps Nevada Power light up Las Vegas while keeping costs down. Page 67.

[redacted]

NETWORK STANDARDS

Cooperation — real and intended — is the byword in the LAN area. As 13 vendors demonstrated FDDI interoperability over unshielded twisted-pair copper wiring last week (*page 4*), a coalition of vendors is ready to back a standard for wireless LANs at **PC Expo** later this month. *Cover 1*. Next week's EMA conference will focus on the X.400 standard and its impact on global E-mail. *Page 2*

NETWORK MANAGEMENT

Banyan unwrapped management products for its **Vines** network operating system (*page 12*), while rival **Novell** has positioned itself to release a more enterprise-oriented version of its **NetWare** management system. *Cover 1*

CLIENT/SERVER

The rush to client/server systems is one factor driving decentralized firms to recentralize IS — but not in the old glass house. *Cover 1*. **NASDAQ** goes client/server with a Unix trading workstation that grabs transactions from mainframes and distributes data to a wide variety of clients. *Page 4*

DATABASES

Oracle and Novell customers say they are eager to see their vendors team up to stave off **Microsoft**'s advances, but only if the partnership simplifies product installation and support. *Page 12*. **Sybase**'s Replication Server — due this week — is said to be key to advancing the firm's client/server scheme and differentiating its **System 10** from rival **Oracle 7**. *Page 15*

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MCI, BT form global partnership

By Joanie M Wexler
WASHINGTON D C

The competitive telecommunications tide shifted yet again last week when worldwide carrier BT and MCI Communications Corp said they will combine their networking might to deliver consistent global services

The embryonic plan includes the eventual formation of a joint-venture company, a $4.3 billion BT investment in MCI for a 20% stake in the carrier and MCI's acquisition of BT North America, inc for $125 million The deal nipped at the heels of an earlier AT&T announcement also aimed at providing one-stop shopping for global telecommunications buyers [CW, May 31].

AT&T's approach, however, is to form partnerships with local Postal Telephone and Telegraph (PTT) authorities abroad to satisfy expanding multinational customers.

Multinationals have long been hankering for a single point of contact for global network services They want to be relieved of the headaches and service setup delays associated with different service offerings and regulations among myriad foreign telecom authorities.

> Both partners will distribute services created by the MCI/BT joint venture MCI will handle the Americas and the Caribbean, while BT will take responsibility for the rest of the world

However, BT and MCI "haven't really ironed out the details yet, so it's too early to say how we might benefit," said a spokeswoman at MCI customer Citicorp in New York

"We would hope to be closer to one-stop shopping, but there are many companies with many different regulations [for MCI and BT] to overcome. So services could be a long way off," she said.

Rick Malone, a partner at consultancy Vertical Systems Group in Dedham, Mass., predicted that users will eventually leverage better contracts because of likely tit-for-tat warring among fewer global players

With the consolidation of global carriers, he said, the sales call "becomes a direct mission against the other competitor — like the Coke and Pepsi wars. Pricing is likely to be better through negotiation because of the nature of combatance," he said.

In one sense, "the AT&T approach has a big advantage" to users, said Berge Ayvazian, a vice president of telecommunications at The Yankee Group, a Boston consulting firm "It entails much greater involvement by the regional carriers" across the world, so users should wind up with better support in each region

By contrast, the MCI/BT approach is to jointly build their own worldwide network infrastructure that bypasses PTT involvement. This means the venture's global reach will not leverage existing regional infrastructures and technical and regulatory expertise, Ayvazian explained.

MCI and BT intend to invest $1 billion in the joint venture, which will "combine the best of breed" of the carriers' offerings, the MCI spokeswoman said. These include the network management services of Syncordia, an outsourcing company that BT set up in 1991.

The two carriers, which are fiercely competitive in the U S., offered few details about how they will tread in their currently overlapping markets until a definitive agreement and regulatory and shareholder approvals fall into place next year

Also up in the air is MCI's current 25% stake in Infonet, a global value-added network service provider owned by 11 large telecommunications companies Infonet's biggest global competitor today is BT, according to Larry Morgan, Infonet's vice president of marketing

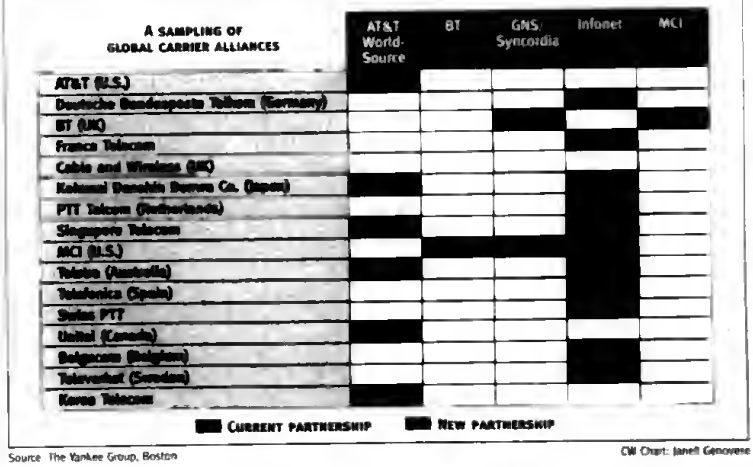
Morgan said Infonet "doesn't expect MCI to continue being a shareholder," as the other 10 infonet shareholders are likely to vote MCI out on a conflict-of-interest basis.

MCI President Daniel Akerson would only say, "We will have to sort through what happens to Infonet and our 10 partners "

MCI and BT said its joint venture will operate as an "equal partnership," although BT will hold about 75% equity in the venture Ayvazian interpreted this to mean that BT is "reserving a spot for an Asian partner."

Cross-border bedfellows

The BT/MCI deal is the latest and largest partnering effort to deliver consistent global telecommunications services to expanding multinational companies



Source The Yankee Group, Boston

CW Chart: Janell Genovese

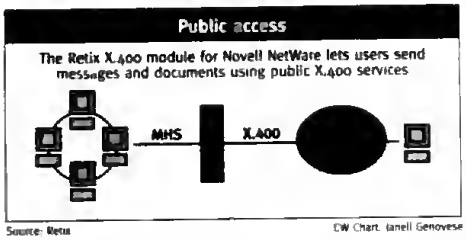
E-mail barriers receding

X.400 standard poised to spread messaging around the world

By Lynda Radosevich

X.400 is finally coming of age, encouraging users to push electronic mail beyond corporate walls into the world — a trend that will be explored in depth at the Electronic Mail Association's (EMA) annual conference in Atlanta next week.

"X.400 is going to be everywhere. It won't be the exclusive way to exchange mail — Internet connections will also flourish — but it will be ubiquitous," said conference keynote speaker Walter Ulrich, a director at consulting company Arthur D. Little, Inc. in Cambridge, Mass. The International Standards Organization's X.400 messaging transport protocol and its role in fostering global E-mail connections will be featured in product announcements and sessions at the conference.



In a survey sent to 400 EMA members, both end users and vendors picked 1993 as the year that X.400 will hit critical mass as a key messaging backbone technology. Conversely, users said that 1995 will be the year that the X.500 directory standard would become important to E-mail applications.

Other hot issues expected to be explored at the show are E-mail addressing and directory synchronization, administrative headaches in achieving interoperability across disparate platforms, tying E-mail into business systems and mobile and wireless E-mail, Ulrich said.

On the X.400 front, Retix and Novell, Inc. will demonstrate a new X.400 module for Novell's NetWare Global Message Handling Service (MHS) messaging software. Based on Retix technology, the module enables NetWare users to exchange messages, documents and files with users at X.400 destinations.

Because it runs as a native part of MHS, the module runs on the same machine and administration is familiar to NetWare administrators, said Arvind Argrawal, vice president and general manager of the messaging products division at Novell.

Unlike an X.400-to-MHS gateway, the module can use the NetWare directory service, including user aliases, so end users can avoid X.400's complicated addressing scheme (see chart at left).

The Retix X.400 for NetWare Global MHS will be sold for $6,995 through Novell channels within 60 days, the company said.

Meanwhile, the X.400 Applications Programming Interface Association (XAPIA), a nonprofit association of vendors and end users, will announce this week that the Institute of Electrical and Electronics Engineers (IEEE) accepted application programming interfaces (API) jointly proposed by the XAPIA and the X/Open Co. The APIs are now certified as international standards and published by the IEEE for vendors and users worldwide.

Without standard APIs, applications cannot necessarily communicate with X.400 services provided by different vendors.

Piece of the pie

Announcements at the EMA conference next week will include the following:

▶ **Lotus Development Corp. confirmed that it will release CC:Mail for Windows E-mail software Version 2.0, which features filtering and rules-based routing capabilities.**

Lotus will also unwrap a CC:Mail client for Hewlett-Packard Co.'s X.400-based OpenMail server. Lotus would not confirm reports that it will also announce a wireless version of CC:Mail for RAM Mobile Data and Ericsson GE Mobile Communications, Inc. systems.

▶ **Microsoft Corp. will introduce Mail gateways, including an updated gateway that lets IBM's Professional Office System act as a back end to Mail clients running PCs with 3270 emulation, said a source close to the company.**

▶ **Beyond, Inc. will introduce BeyondMail Release 2.0, an update that adds advanced work-flow and filtering capabilities to the E-mail software.**

▶ **Worldtalk Corp. will announce that it is extending the directory synchronization capabilities of its X.400 messaging integration software to work with both CC:Mail and Microsoft's Mail.**

— Lynda Radosevich

Relational databases

Microsoft upgrades Access in front-end query tool sweepstakes

By Michael Vizard
BELLEVUE, WASH.

With the delivery of Version 1.1 of its Access relational database last week, Microsoft Corp. has embarked on a campaign to position the product as the leading front-end query tool for accessing reams of corporate data stored on distributed relational databases.

However, that campaign is likely to encounter stiff opposition as vendors square off over which one provides the best set of query tools for client/server applications.

Access 1.1 includes a number of added ease-of-use features and better integration with other Microsoft applications, but the major elements in the release are a set of Open Database Connectivity drivers that will give users a SQL interface to relational database management systems from Oracle Corp., Sybase, Inc. and Microsoft.

These drivers will make it possible for users to deploy Access, which comes with a set of visual query tools, as a front end to these databases. "We're seeing a lot of people using Access to get at data in products like SQL Server. People like the visual-oriented queries," said Julie Armstrong, services project manager at Corporate Software, Inc. in Canton, Mass.

Feature-rich

Access 1.1 ease-of-use features include the following:

- **Faster text importing.**
- **Improved support for Striave.**
- **A setup wizard.**
- **A Windows Help compiler.**

For example, Boatmen's Bancshares, Inc. in St. Louis is using Access as a front end for a tracking and administration application that will use an Oracle RDBMS on a back-end server.

Advantage Microsoft

According to Larry Allin, vice president of technology assessment, the financial services company originally leaned toward Paradox for Windows from Borland International, Inc. in Scotts Valley, Calif. "But the developer of the application convinced me that Access was a better end-user query tool and is integrated with other Microsoft applications. But as a programmer, I still think Paradox is a better database," Allin said.

Still, other sites said Access is a programmer's tool that does not belong on end user's desktops.

"About 90% of the users never develop database applications. We'll use the runtime license in Access to deploy the applications on users' desktops," said Glen Jurmann, section manager for office technology at Baxter Healthcare Corp. in Deerfield, Ill.

According to Allin, however, the backlog of applications that need to be developed is requiring information systems departments to give users tools that will allow them to build their own applications without IS' help.

> **"A lot of people are confusing low price with ease of use."**
>
> *— Richard Finkelstein, Performance Computing*

Chasing Microsoft into this market segment are Borland, which will add a SQL interface to Paradox this summer; Oracle, which has vowed to improve its front-end query tools; and Software Publishing Corp., which markets the Superbase RDBMS for Windows.

In addition, some IS shops are opting for less complex packages that provide access to RDBMSs.

For example, the Tire Division Information Systems unit of Goodyear Tire & Development Co. in Akron, Ohio, has opted to deploy the Approach RDBMS for Windows, which does not include a programming language. It was developed by Approach Software Corp. in Redwood City, Calif., to give users access to Oracle, dBase, FoxPro and Paradox databases.

According to Fred Hildenbrand, director of advanced LAN development applications, Goodyear users needed a robust ad hoc query tool that was easy to use, but they did not require a programming language for building applications.

Because of the various qualities and capabilities of the client/server tools that are available, Richard Finkelstein, president of Performance Computing, Inc., a database consultancy in Chicago, said IS directors need to be wary.

"A lot of people are confusing low price with ease of use. You have to remember there is a battle for market share going on, and some tools may not be appropriate for end users," he said.

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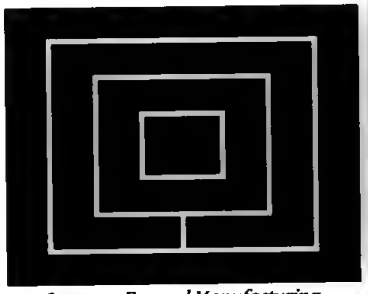

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NASDAQ makes client/server investment

SCO Unix chosen for its Intel multiprocessing capability and support

By Jean S. Bozman
ROCKVILLE, MD

The Santa Cruz Operation (SCO) went public last month on the screens of the NASDAQ electronic stock market. But SCO will soon make an appearance behind NASDAQ screens as well: Its Unix operating system will be the centerpiece of a client/server architecture that will distribute NASDAQ trading information to some 4,000 stockbrokers at 1,200 sites nationwide.

The National Association of Securities Dealers' (NASD) move to open systems is being made, in part, to help attract members to its organization, which now has 437,000 brokers and 5,250 firms. Many of those firms use dumb terminals or PCs to view the NASDAQ ticker, the association said.

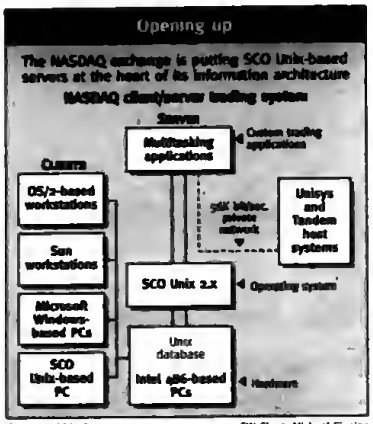
Wall Street analysts turned to Unix workstations several years ago in search of a competitive edge and high-speed processing. NASD has also portrayed itself as leading-edge because it operates the all-electronic NASDAQ stock market, which it claims is the world's second-largest securities market after the New York Stock Exchange. Unlike other markets, NASDAQ does not have a central trading floor.

Out with the old, in with the new

The NASDAQ Workstation II client/server system software will be installed at user sites in early 1994, after a year's development by a 20-person team. The plan is to gradually replace a homegrown database and aging Intel Corp. 80286-based IBM PCs that run DOS character-based applications. Some of the traders' old PCs ran the Xenix derivative of Unix now sold by SCO.

The new SCO-based workstations, which can operate as clients or servers, will combine Unix multitasking applications that support trading and analysis with a standard Unix database; NASDAQ has not yet selected which database to buy.

The workstations will display data from Unisys Corp. 1100 series and Tandem Computers, Inc. host systems that is broadcast over a 56K bit/sec. private network. The old network, now being upgraded, ran at only 9.6K bit/sec. (see chart).



Source: NASDAQ — CW Chart: Michael Siggins

NASDAQ selected the SCO Unix 2.X operating system because it can support server-based graphical user interface applications on the many types of Intel 486 platforms brokers use. One design goal was to standardize the environment without forcing independent traders to buy specific hardware.

The current workstations run on all custom code, according to Bob Riess, senior vice president of NASDAQ software development. "We wrote operating system extensions on top of DOS to gain multiprocessing capability." Using Neuron Data, Inc.'s Open Interface application development tool, programmers designed code that can run on many clients, he said.

The wide variety of client machines at brokers' sites include Microsoft Corp. Windows-based PCs, Sun Microsystems, Inc. workstations, IBM OS/2-based PCs, Apple Compnter, Inc. Macintoshes and other SCO Unix PCs. Most of the clients run on local-area networks running Transmission Control Protocol/Internet Protocol to accommodate interoperability, NASDAQ said.

Good provider

SCO Unix also provides a good foundation for client/server computing, according to Riess. "What Unix gives us is full multiprocessing capability, a good development environment and a lot of the kind of support you need in putting together a large-scale workstation environment," he said.

When development began last year, few vendors could meet NASDAQ's requirements. "There was no other alternative at the time," Riess said, referring to Unix software systems now coming on the market that can run on 486 machines. "But that doesn't change the equation for us. We were committed to getting this product out." He did not rule out future evaluations of Microsoft's Windows NT operating system, however.

Users like NASDAQ will see Unix competition heating up in the 486 market, where SCO pioneered, analysts said. "There are going to be a lot more Intel choices very soon," said Dave Smith, director of Unix systems research at International Data Corp. in Framingham, Mass. He pointed to SunSoft, Inc.'s Solaris, UnixWare from Novell, Inc.'s Univel unit and Next, Inc.'s NextStep as examples.

One and only

SCO's synthesis of Unix servers with PC applications was strengthened by its ability to run Microsoft code under Unix. "Most Unix users probably would have liked to have the productivity applications of the DOS world, but they had to use emulation," said Rikki Kramer, principal analyst at Dataquest, Inc. in San Jose, Calif. "SCO was really the only vendor that had an integrated set of applications, which saved work for users."

Networking standards

FDDI over copper matures

By Lynda Radosevich
BOSTON

Fiber Distributed Data Interface (FDDI) technology, typically used in network backbones, moved toward desktop viability last week when 13 vendors demonstrated that their products work together over low-cost unshielded twisted-pair copper cabling.

At 100M bit/sec., FDDI provides the kind of bandwidth needed to shuttle big-byte applications — such as those supporting graphics, voice and video — between desktops and servers.

By porting FDDI to low-cost copper unshielded twisted-pair cabling and stimulating competition with interoperable products, vendors will be able to offer end-to-end FDDI connections for under $1,000 per desktop by the end of the year, predicted Charlie Robbins, director of communications research at Aberdeen Group in Boston.

However, users have more than FDDI to consider for high-speed networking. Switched Ethernet and duplex Ethernet [CW, May 24] are viable alternatives today. Asynchronous Transfer Mode is a fledgling technology, and 100M bit/sec. Ethernet is under development (see chart at right).

For Brian Cashman, manager of network hardware engineering at the University of Michigan in Ann Arbor, the FDDI demonstration helped validate what he sees as a possible solution to desktop bandwidth problems.

The university, which already has a fiber FDDI backbone, is considering FDDI over unshielded twisted pair for some twisted-pair Ethernet networks for applications such as medical imaging and large data transfers.

"Interoperability is motherhood and apple pie; it demonstrates that a standard is really working," Cashman said.

Participating in the demonstration were Cabletron Systems, Inc., Crescendo Communications, Inc., Digital Equipment Corp. and Interphase Corp. with adapter cards and hubs; 3Com Corp., Codenoll Technology Corp., Network Peripherals, Inc. and Silicon Graphics, Inc. with adapters; Micro Linear Corp. and Motorola Data Communications with chips; and Pulse Engineering and Technitrol, Inc. with copper transceivers.

The standard for FDDI over copper reached draft form in February and is expected to be finalized by year's end.

"The prices for all these technologies are coming down in real time," Robbins said, "but it's important to remember that the cost of the wiring is more than the other costs combined. That's why supporting Category 5 [copper cabling] is vital."

The big shift

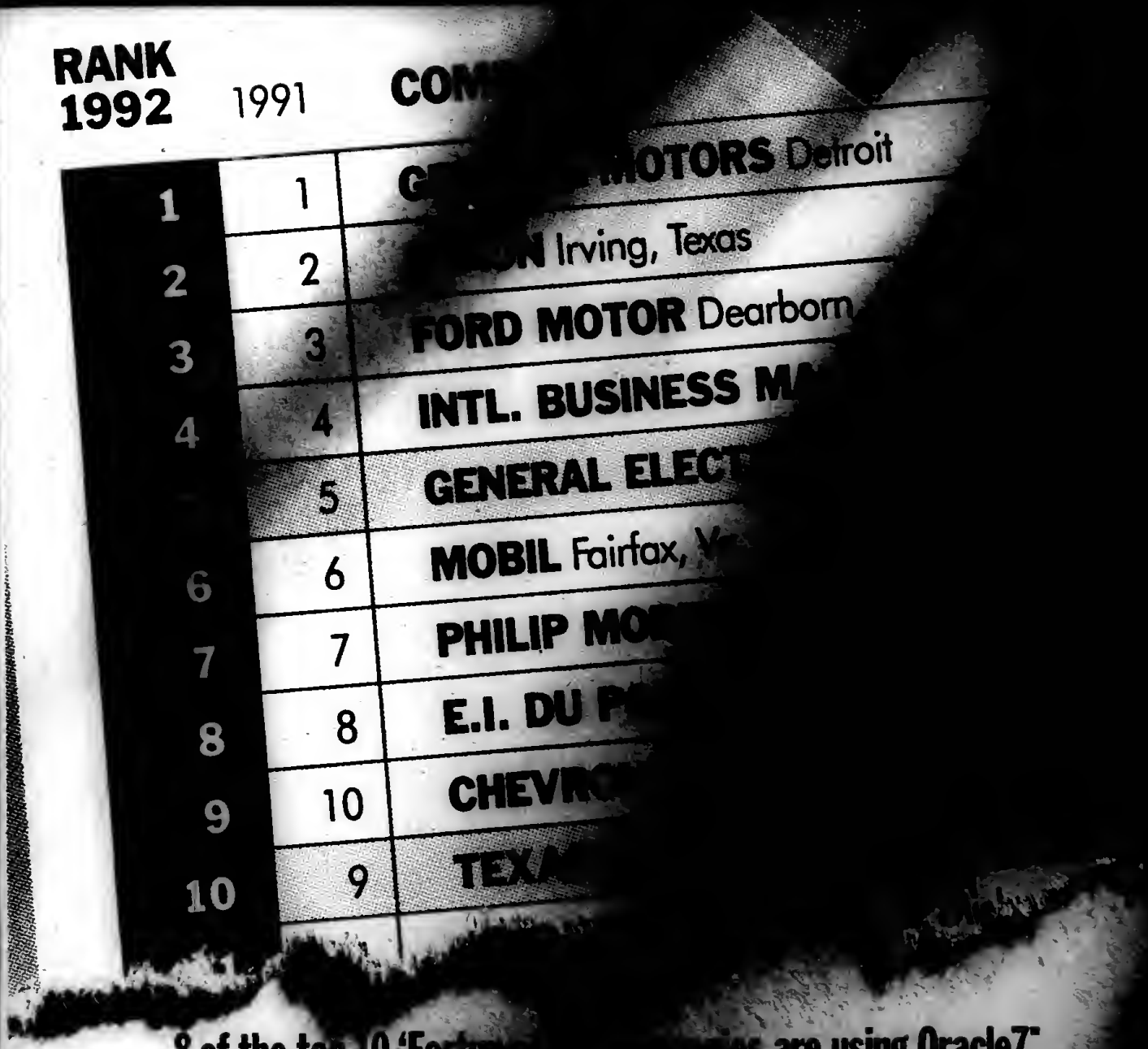
Crescendo Communications has seen sales of FDDI hubs and adapters shift from 60% fiber- and 40% copper-based products last year to 70% copper- and 30% fiber-based products this year.

Fast LAN alternatives

LAN technology	Estimated cost per hub port	Estimated cost per adapter
Ethernet switching for Ethernet users	$700 to $2,000	No upgrade cost
Full duplex Ethernet for Ethernet users	$1,000 and up	No upgrade cost
FDDI over unshielded twisted pair	$600 to $1,000	$800 to $1,000
Asynchronous Transfer Mode	$2,000 and up	$1,400 and up
100M bit/sec. Ethernet	NA*	NA*

* Not available

Source: Aberdeen Group, Boston — CW Chart: Janet Genovese



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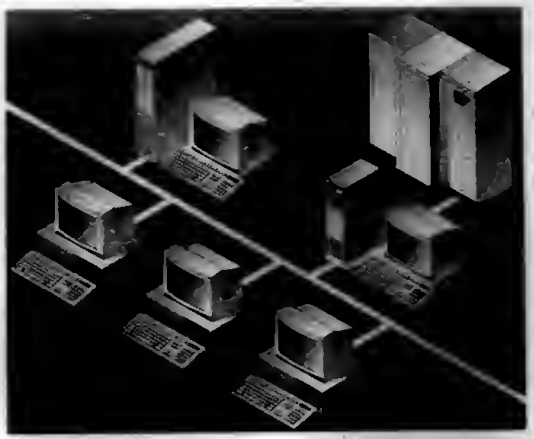

Above: Windows NT delivers power, reliability and open architecture for client-server computing.

Right: This versatile operating system platform includes versions for both clients and servers.

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News Shorts

The White House links to Internet

The White House has added a connection to the Internet to increase public access to the administration, the Office of Presidential Correspondence announced last week. Staff members will read and acknowledge the incoming electronic mail, but the White House may not have the capability to send replies before year's end. President Clinton's Internet address is president@whitehouse.gov. Vice President Gore's address is vice.president@whitehouse.gov.

3Com offers peek at financials; suit filed

3Com Corp. last week predicted its fiscal fourth-quarter sales would total $167 million, a 33% increase over the same period last year. The company expects earnings per share to reach 40 cents, a 100% increase over last year's fourth quarter. The estimated results were below analysts' expectations. Separately, a shareholder class-action lawsuit was filed against 3Com and some of its officers and directors, alleging actions violating federal securities laws. 3Com said it intends to defend itself against the claims "vigorously."

IBM adds to systems management line

IBM's SystemView architecture-in-waiting got a much needed boost last week. The company announced a uniform way of collecting systems and performance management data from many IBM mainframe packages. Called Enterprise Performance Data Manager/MVS, the modularized software also stores the data in a DB2 database and presents it in graphical form; the package ships this month.

Tandem, ViewStar to pitch joint system

Tandem Computers, Inc. in Cupertino, Calif., and ViewStar Corp. in Emeryville, Calif., said they will jointly market a client/server document handling system early next year. Tandem's NonStop SQL relational database servers will handle images, text and fax data for Microsoft Corp. Windows clients on PC local-area networks. The company is considering tiered pricing for the servers but provided no details. ViewStar offers per-user pricing.

Vendors back PC configuration method

Intel Corp. and Microsoft last week announced that they would establish a special interest group (SIG) to advance their Plug and Play ISA Specification. Plug and Play ISA was designed to make PC configuration virtually automatic. More information on the Plug and Play ISA SIG will be announced next month.

Fiber tentacles grow longer

Pacific Bell last week announced plans to build a fiber-to-the-home network for an upscale development of 111 homes in Orange County, Calif. The network, based on ADC Telecommunications, Inc. network access devices, will initially support Integrated Services Digital Network and T1 services. It will handle video, interactive multimedia, image transfer and other services in the future, the carrier said.

SHORT TAKES Gilbert Williamson, who recently stepped down as chief executive officer at NCR Corp., has been named to the board of directors at The Santa Cruz Operation. . . . Unix System Laboratories, Inc. has started a branding program to let users know which vendors are basing their transaction processing monitors on USL's Tuxedo monitor. . . . NCR has introduced Comten UTSCON-1, software designed to provide access between BX.25 terminals and Amdahl Corp.'s UTS mainframe environments.

News shorts, *page 16*

Imaging investment puts money in bank

Texas Commerce system said to ease post-acquisition agony

By Neil Margolis
HOUSTON

Post-merger melding of information systems tends to be a nightmare at worst and a headache at best. But when an acquisition increased the size of Texas Commerce Bancshares' Consumer Credit Operations Center by about 67% last month, "it was a non-event," according to Senior Vice President Allen Cournyer.

Aided by an imaging system that eliminated all paperwork from the generally unwieldy consolidation process, the 300-person unit "turned into 500 overnight, with just an increase in our fax capacity, the addition of a laser [printer] to print more loan documents and a switch of phone numbers," Cournyer said.

The slick segue is the latest benefit the $17 billion subsidiary of New York-based Chemical Banking Corp. owes to its imaging operation, but far from the first.

Two years ago, a ViewStar Corp. imaging and workflow system on a Compaq Computer Corp. platform operating across a Novell, Inc. NetWare local-area network catapulted Texas Commerce into the consumer loan business. The experiment, launched to bring order to the bank's back-room functions, propelled the bank to player status in a market it had entered only a year earlier [CW, March 15].

In the past year, Cournyer said, the bank tripled its loan volume, knocked issue time down from several days to about 90 minutes and pared its loan processing staff.

However, industry observers cautioned, Texas Commerce's experience may still be more the exception than the rule.

"Does imaging work?" asked Frank Capek, a vice president at The Chase Manhattan Bank NA who spoke at an American Bankers Association conference late last month. Technologically, he said, the answer is yes. However, too many firms are still charging headlong into imaging the wrong way, for the wrong reasons and with predictable results, he added (see box).

"Whether or not imaging will be successful [in a firm] is largely a question of how the business is organized," noted Bruce Silver, an analyst at BIS Strategic Decisions in Norwell, Mass. Both technologically and with regard to corporate dynamics, he said, the more autonomous the business unit, the better its chances of successfully implementing an imaging application.

In addition to skirting the political and technological hassles that persist when two or more business units join forces on a massive project, Silver noted, the benefits of an imaging project undertaken by a single, autonomous unit are easier to demonstrate, quantify and thereby justify to top management.

Texas Commerce, meanwhile, has a few new numbers to flash around if it is asked to justify its investment in imaging.

Earlier this year, the bank acquired about 65% of the deposits of the former New First City Bank from the Federal Deposit Insurance Corp., upping its number of branches from 92 to 125. In the process, it greatly increased its loan volume, Cournyer said.

However, he added, with the addition of two fax machines and 200 more Compaq SystemPro 486 machines to accommodate internal users acquired from New First City, the imaging system is already handling the increased volume without disrupting business.

Pitfalls to avoid

Speaking before an audience of IS and banking professionals, Frank Capek, a vice president at Chase Manhattan Bank, ticked off a list things crucial to avoid in imaging implementation:

▶ "Beware applications involving complex, unstructured desktop image manipulation — you know, WORN: Write Once, Read Never."

▶ "Taking what people are used to doing — for instance, comparing figures between different documents — and translating it into image is considerably difficult. Logic tells you there's some kind of structure under there, but it isn't necessarily easy to find."

▶ Do not chuck the microfilm, Capek said: There are still plenty of uses for it — for instance, the document you absolutely need to have on file but rarely need to eyeball.

▶ Watch out for the ill-structured pilot project. "Don't pilot the technology — it usually works," Capek said. "Pilot the application — and let the user's real, underlying need be the driver, no matter how unglamorous that need may be."

Paper forms head for trash at waste firm

By Michael Vizard
LOMBARD, ILL.

The local trash collector is about to become a knowledge worker thanks to the efforts of Waste Management, Inc.

Waste Management is in the process of installing customized Intel Corp. 80286 PCs running Microsoft Corp. Windows in its 12,000 garbage trucks. One hundred trucks have already been equipped with PCs; the balance should be outfitted by year's end.

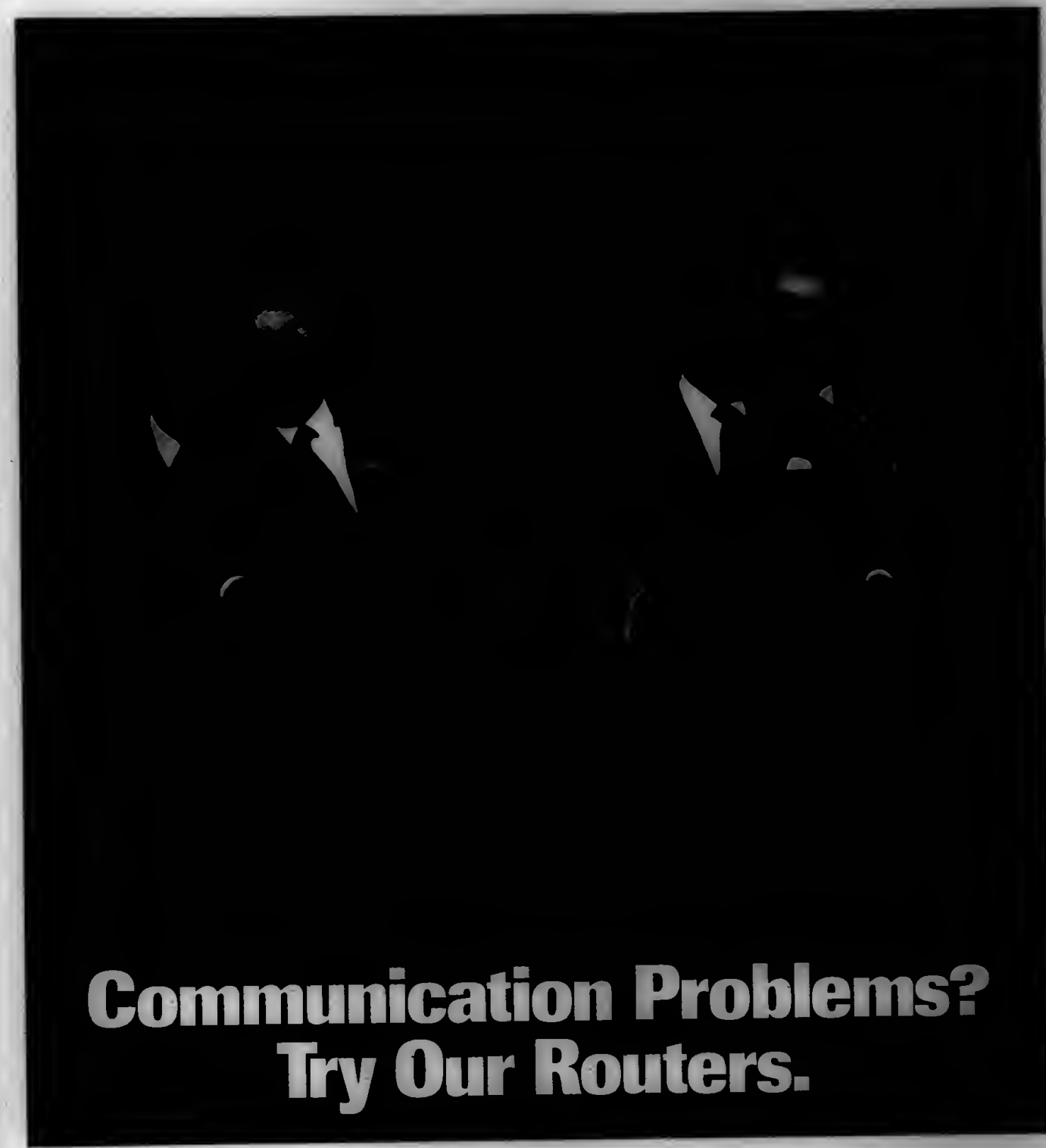
Using a touch screen and an application that was developed with Microsoft's Visual Basic programming language, drivers are linked to dispatchers who can automatically change a truck's route. Workers can also fill out routine forms or relay data about a customer back to the home office using a wireless modem.

The decision to deploy PCs in the trucks is part of an overall campaign to eliminate paper — or internally generated waste — at Waste Management. The $8.7 billion firm specializes in environmental waste management services ranging from garbage trucks to water treatment plants and disposal of radioactive material.

Waste Management has adopted the Notes groupware offering from Lotus Development Corp. in Cambridge, Mass. "We have a big push on to become a green company by becoming a paperless office," said Stephen Michael, senior director of information systems.

Michael said his premier application is a Notes 3.0-based, 45M-byte database that will serve as a directory service for an intelligent electronic-mail hub that Waste Management is building to integrate its dispersed E-mail system.

The goal is to give users access to names and addresses of other users. They will then be able to contact one another using a custom application that Waste Management is building on top of a SoftSwitch E-mail gateway and Hewlett-Packard Co.'s OpenView software.



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Users remain skeptical about DEC focus

By Craig Stedman
ATLANTA

Digital Equipment Corp. will face many obvious questions about its transition to Alpha AXP, its plans for Microsoft Corp.'s Windows NT and ongoing support for older products at this week's Digital Equipment Computer Users Society (DECUS) spring conference. A key concern, one that will not go away, is price/performance across the company's product lines.

Terry Shannon, an analyst at D. H. Brown Associates in Port Chester, N.Y., said an informal survey conducted at a recent regional DECUS meeting in New Mexico pointed to price/performance, interoperability, DEC's commitment to OpenVMS and its software pricing and licensing issues as users' leading concerns.

Given DEC's attempts during the past two years to address its price/performance shortcomings, the prominence still given to that issue surprised Shannon. "I think their price/performance is damn good right now," he said.

A source at a major aerospace customer, however, said the perception of high software costs played a key role in that company's decision to replace a dual VAXcluster 8650 with Sun Microsystems, Inc. workstations. The largest number of complaints about DEC received during a recent poll on the DECUS electronic bulletin board involved pricing, he added.

With information systems managers facing more skepticism from their bosses about buying DEC products [CW, Dec. 14, 1992], DEC management is planning to lend a bigger ear than it did at DECUS conferences in the pre-Robert Palmer days, when the company emphasized technical issues.

As a measure of DEC's concern, Palmer will speak in Atlanta, and at least four DEC vice presidents are scheduled to make presentations. The vice presidents will also hold a joint session added at the eleventh hour: a panel billed as the Digital Listening Forum, in which users will get the chance to engage the assembled executives with questions and comments.

"They're probably just trying to figure out how nervous their customers are," noted George Kerns, assistant vice president of cellular information management operations at GTE Telecommunications Products and Services in Atlanta.

Room for more

About 3,300 attendees were registered to attend this week's DECUS meeting in Atlanta, down from 3,400 at last year's spring conference. DECUS officials are hoping some walk-in business will boost the actual attendance number. The organization is "pretty satisfied" with the advance figure, but even a small decline will press its already strained budget.

Put up or sell off

Monte Ford, director of information services at Bank of Boston, said officials there view the Alpha technology positively but have lingering concerns about DEC's strategic focus. He said the bank still wants DEC to clarify what kind of company it is and what products it is pushing. He cited Sun as an example of a vendor that has honed its focus to a proper pitch.

Conversely, others said they are hoping DEC will step up its move to sell off some of its lesser software programs to third parties, unless it turns around and takes a renewed interest in those products.

Concerns about continued support for OpenVMS and supporting software also loom large. Kerns said GTE's attendees at DECUS will be looking for word on DEC's long-term plans for both the ACMS transaction processing package and the Rdb database.

Angelo Pergantis, database administrator at PacifiCare Health Systems, a Cypress, Calif., health maintenance organization, said he also wants the Rdb question addressed.

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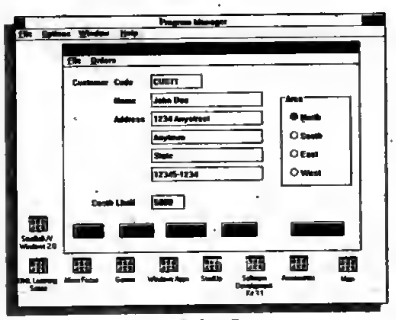

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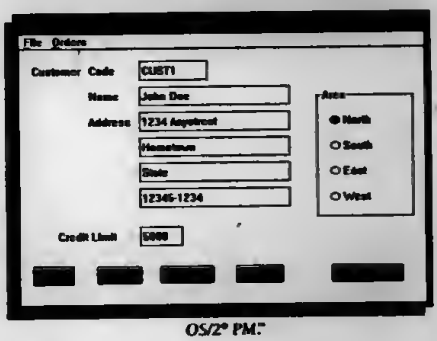

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Banyan expands net services

By Michele Dostert
AMSTERDAM

■ Banyan Systems, Inc. last week announced several 'ease-of-management' enhancements to its Vines network operating system.

Revealed at the Association of Banyan Users International Conference, Banyan's new Simple Network Management Protocol (SNMP) Agent Release 2.0 will allow network managers to manage their Vines 5.X networks, along with other multivendor networks, from a single SNMP-based platform, such as those from Cabletron Systems, Inc., Sun Microsystems, Inc. and Hewlett-Packard Co. The product is scheduled for release this month and is priced at $695 per server, the Westboro, Mass., company said.

Users hailed the multivendor support in the new SNMP agent. "Having one integrated network management method to use across our entire global network will save us a huge amount of administrative time," said Art Beckman, manager of client support services at Pacific Gas and Electric Co., a California utility.

The new agent, which also works with Banyan's Enterprise Network Services (ENS) for Novell, Inc.'s NetWare, can run over Transmission Control Protocol/Internet Protocol, Vines IP, Apple Computer, Inc.'s AppleTalk or Novell's IPX/SPX protocols. Banyan has developed a NetWare Server Management Information Base for the retrieval of NetWare server statistics via ENS for NetWare.

The new agent has also been enhanced to support Trap and Set requests, allowing users to manage their networks by defining parameters and events that automatically trigger responses, such as alarms or server shutdowns, according to the company.

Although all SNMP agents can report to management stations, Banyan's support for Trap and Set, as well as its broad protocol support, put it in front of competitors such as Microsoft Corp. and Novell.

Other announcements

Banyan also announced Release 3.0 of the Vines assistant, priced at $699 per server and scheduled for July availability. It features enhanced network capabilities such as the ability to send alarms if certain thresholds, such as server disk use, are exceeded. The alerts can be sent automatically either to a management console or to any user via electronic mail.

Finally, Banyan users will soon be able to manage their Vines networks from the same management console as their IBM mainframes via a new NetView Service Point. Priced at $2,195, it is slated for an August release and will support the NetView command structure, passing more than 80 Banyan alerts to a NetView console.

"A lot of our large customers still rely heavily on their mainframe network and wanted to be able to manage their LANs from the same platform," said Bob Martin, Banyan's network management product manager.

Although Vines, like NetWare, has long reported information into NetView, the new NetView Service Point provides two-way communication: Managers can manipulate Vines servers directly from the NetView console.

Oracle, Novell bundle up

By Kim S. Nash and Michele Dostert

Customers of Oracle Corp. and Novell, Inc. are eager to see the two cozy up to stave off Microsoft Corp.'s advances in the server world, but only if the partnership simplifies product installation and support, users and analysts said last week.

Oracle 7, the latest database from the Redwood Shores, Calif.-based firm, will be bundled with Novell's NetWare 4.0 network operating system for a price that is 10% to 15% lower than the cost of buying the two products separately, analysts familiar with the plan said. Novell and Oracle declined to comment on the relationship, which they plan to announce next week.

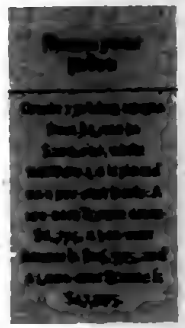
The deal will also give users one-stop support, allowing customers to call either Novell or Oracle with service questions regardless of which product is problematic.

"That alone is great news," said Michael Corey, president of the International Oracle Users Group.

With plans also in the works to bundle Oracle 7 with Novell's UnixWare, users and analysts characterized the partnership as an anti-Microsoft strike.

"It's a real war, an anti-NT war," said David McGoveran, president of Alternative Technologies, a consulting firm in Boulder Creek, Calif. He noted that Oracle has yet to formally commit to building a Windows NT version of its database as have other database players, such as Informix Corp. and The ASK Group, Inc.'s Ingres Products Division.

Microsoft has pushed increasingly hard into the server end of client/server computing by pricing its SQL Server back-end database at a low price of $499. With its Novell partnership, Oracle can get Oracle 7 into the hands of PC users more cheaply than it could working alone, according to Corey.



Still unclear is the degree to which Oracle 7 will be integrated with NetWare 4.0 beyond Oracle's NetWare Loadable Module (NLM) version, observers said. For the relationship to be worth Oracle's while, the database has to be optimized for NetWare, analysts agreed. Otherwise, Oracle does not have a leg up on other database makers with Novell pacts, such as Gupta Corp. Gupta sells an NLM version of its SQL Windows database and tool set.

One user, however, has his own idea about what he wants to see.

"It would be really great if Oracle used NetWare's directory and security services," said Jeff Levine, MIS director at Rapp, Collins, Marcos, a New York-based advertising firm.

Such cooperation between the products would mean Levine would have fewer security worries when outside clients tap into Rapp, Collins' databases because managing user access rights is easier with NetWare's directory services, he said.

Novell boosts management

CONTINUED FROM COVER 1

ing Unix-based offerings from HP, Sun and IBM, sources said.

Novell declined comment.

Version 2.0 "is leaps and bounds ahead of Version 1.1, which was a baby product," said Ravi Gulati, president of Stonybrook Services, Inc., an NMS application developer.

"New features, particularly the RMON support, give NMS a whole new level of access to the network that we really like," said a beta-test user at a major aerospace firm.

RMON is a Simple Network Management Protocol (SNMP) spec that defines how a remote management node collects and sends key network statistics to a central management station. Novell is expected to provide RMON Netware Loadable Modules (NLM) that can sit on each LAN segment and report back to the central NMS console.

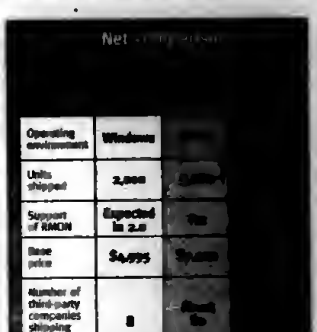
Novell will drop the price of the central platform to less than $3,000 and charge about $900 per LAN segment for RMON support, Gulati said. "Most users can afford that," he said.

In contrast, HP delivers RMON on its LANprobe, a proprietary box priced at $3,095 per LAN segment.

Support of RMON will be key to Version 2.0's competitiveness as an enterprise management platform, industry sources said. Novell is trying to leverage its strong NetWare base, which makes up an estimated 65% of the network operating system market, to become more of an enterprise network and network management provider, said Michael Howard, president of Infonetics Research, Inc., a San Jose, Calif., research firm.

No contest

For some NetWare users, choosing NMS, which has shipped as an SNMP-based manager since October 1992, was close to a no-brainer. ITT Fluid Technology Corp., for example, found that it could implement an NMS NLM on a NetWare server on each network segment it wanted to monitor, at a cost



CW Chart: Michael Siggins

of $500 per segment, said Andrew Kiolbasa, coordinator of end-user computing.

Each server module collects key information that can then be accessed by the central, Microsoft Corp. Windows-based console.

"This is much more cost-efficient than implementing Unix management systems at each location, which is what we thought we would have to do" with HP's OpenView or Sun's SunNet Manager, Kiolbasa said. "Why implement Unix platforms to manage DOS systems?"

In addition to incorporating NetWare Services Manager, Novell's own application for managing NetWare servers, NMS is gaining the support of a growing horde of third-party applications for managing hubs, routers and workstations. For example, ITT Fluid Technology recently began implementing NMS Version 1.1 in combination with Router Manager for Cisco, an NMS application recently shipped by Stonybrook.

Among the features that Kiolbasa said he wants from the next NMS release is a way for the system to recognize when a file server locks up. Kiolbasa said he would also like to see tighter integration of Novell's hub, server and LAN segment management applications under NMS' graphical user interface. Version 2.0 should fix this by integrating a group of hub, NetWare and LAN management applications under a single user interface and map/discovery utility, sources said.

In addition, the new version is expected to interact directly with NetWare v3.11 server utilities to track areas such as software and hardware configurations and print service status, a vendor source said.

Version 2.0 is also expected to manage NetWare 4.0, with its enterprise-oriented NetWare Directory Services and systemwide administration utilities.

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AT&T assumes majority position in EO

By Michael Fitzgerald
CHICAGO

Affirming the importance of personal communications in its strategic plans, EO, Inc. investor AT&T said it will buy a majority interest in the start-up.

EO is perhaps the first company to ship a personal communicator, a portable device designed to let individuals compute and communicate everywhere.

The EO 220 and 440 Personal Communicators combine pen computing, electronic mail, fax and cellular phone capabilities in a sleek package. EO's products use AT&T's Hobbit microprocessor, while potential competitors, such as Apple Computer, Inc.'s Newton, have opted for other chips.

AT&T's investment "definitely adds to our comfort level that this technology is going to be around," said William Tsang, manager of medical systems at Pfizer Pharmaceuticals, Inc. in New York. Pfizer is examining a variety of approaches to pen computing, including EO's, and Tsang said vendors have realized that the "pen is not the main thing anymore; portability and communications are."

EO began shipping its products in volume in April, but observers said it has not sold many machines.

One source close to AT&T said the company's difficulty in marketing its products was behind AT&T's increased investment.

The source said that if AT&T controlled EO, it would then be able to step in and aggressively pursue new marketing plans, such as one that AT&T and Go Corp. are currently discussing that would give seed machines to high-profile users [CW, May 31].

"AT&T sees this platform as the next telephone, which makes it potentially very big and very important," said Portia Isaacson, president of Dream IT, Inc., a consultancy in Colorado Springs. She said AT&T's marketing muscle and cash reserves should help boost EO's sales.

AT&T currently owns 20% of EO and will up its stake to 51%, pending approval by EO's board and shareholders. Once the deal is complete, AT&T's name will go on EO's products. EO's products will also be sold through AT&T's retail phone stores.

Vendor allies seek to boost wireless

CONTINUED FROM COVER 1

Participating companies will advocate a Xircom-designed peer-to-peer wireless radio-based LAN protocol called Netwave, currently before the IEEE standards committee alongside three competing proposals. Netwave will be applicable to desktop LAN and PCMCIA adapters alike.

For Younkers, Inc., a department store chain based in Des Moines, Iowa, "a standard like this absolutely is important" to help reduce wireless costs and force competing vendors to increase functionality, said Dan Smith, senior vice president and chief information officer.

Younkers is installing 2,500 NCR wireless point-of-sale devices in 54 stores. Wireless standards will "open" the devices and increase the store's flexibility in choice of vendors, cards and product features, Smith said.

First appeal

The common wireless LAN technology, if it catches on, will likely have initial appeal in the portable computing arena, observers said.

"The portable area is probably where a standard is most needed," acknowledged 802.11 committee member Bob Rosenbaum, who is also director of marketing at desktop-oriented wireless LAN vendor Windata, Inc. in Northboro, Mass.

"All laptop vendors will eventually integrate [a wireless link] into their computers. So users want to know if they buy a Toshiba here and a Compaq there, they can communicate properly," Rosenbaum said.

Microsoft, along with Intel Corp., Hewlett-Packard Co., Canon U.S.A., Inc., Xerox Corp. and others, will announce wireless technology this week in New York when Microsoft demonstrates its "At Work" office architecture, sources close to the company said. The "At Work" vision will include infrared and data-over-cellular connections to office devices such as fax machines and printers based on the Windows interface, the sources said.

Typical applications will arise when users need to create temporary LANs, such as when employees form a workgroup in a conference room, users from different firms collaborate at an industry meeting or an accounting team arrives at a client for an audit.

The timing is ripe because while user attraction is high, there is not a large installed base of neophyte wireless PCMCIA devices yet, said John Donovan, program director at WorkGroup Technologies, Inc., a consultancy in Hampton, N.H. This means that standards would not require a lot of swapping out, he explained.

Xircom said its protocol controls access to the network medium, such as radio or infrared waves. While Xircom's own product implementation will couple the protocol with radio spectrum in the 2.4-GHz frequency range, other vendors could license Netwave and run it over other wireless media and frequencies, Belanger said.

IBM, NCR and Spectrix Corp. also have proposals on the table at the IEEE, which means the typical standards-committee "religious" wars are raging.

In this case, the committee must decide whether an Ethernet-like, peer-to-peer access mechanism such as Xircom's and NCR's or a technology with a central unit controlling network access, such as IBM's and Spectrix's, is more beneficial to the user community, Rosenbaum said.

Standards du jour

Compaq Computer Corp. and Dell Computer Corp. may align themselves with Xircom, but their weight may not give sway to Xircom's standards proposal, as the two companies have one product that supports PCMCIA between them. Compaq continues to say it will not build PCMCIA into its notebooks until it sees a need in the market.

Toshiba America Information Systems, Inc., which supports PCMCIA in several of its portables, is likely to support the competing NCR scheme currently under consideration by the IEEE standards body, according to a source at Toshiba. Toshiba's market clout could turn the industry away from the Xircom protocol.

The source said Toshiba will not wait for the IEEE to set a standard before deploying wireless links in its notebooks, since it expects up to a two-year delay from the slow-moving body.

Toshiba plans to soon let customers test its wireless technology. When the IEEE does set a standard, "we will support it," the source said. The source added that engineers from all the firms are engaged in talks.

— Michael Fitzgerald

Pocket-size computers

PDA market heats up with new choices

By Ellis Booker
CHICAGO

With the unveiling of their jointly developed Zoomer system, Casio, Inc. and Tandy Corp. last week became the latest entrants in the race to equip professionals and consumers with personal digital assistants (PDA).

The announcement, made at the Summer Consumer Electronics Show, followed a disclosure last week by Sharp Electronics Corp. in Mahwah, N.J., that it will ship in the third quarter a PDA based on Apple Computer, Inc.'s Newton intelligence system. It is expected to ship by the end of the summer and carry a price of approximately $1,000.

Casio officials, who claim to have sold 700,000 personal organizers in the U.S., said the Zoomer PDA will target a broad consumer market. They conceded, however, that initial customers will likely be more sophisticated business users and current users of digital diaries. Casio said Zoomer would be available in September through the major consumer electronics chains at a suggested retail price of $899.95.

Tandy officials said they hope to have Zoomer, priced at $699, in all of their Radio Shack outlets by October.

Slow but steady

"This year, we see only 40,000 [PDA] units being shipped by all vendors," said Jeffrey Henning, senior industry analyst at BIS Strategic Decisions in Norwell, Mass. However, BIS predicted that number would grow to 120,000 units by 1994. "We're pessimistic in the short run, optimistic in the long run," Henning said.

Zoomer's built-in applications include a 50,000-definition dictionary, a 100,000-word spell checker, a 660,000-synonym thesaurus, a 26-language translator, a sophisticated calculator and three games. Creators of the 16-ounce unit emphasized their PDA's 100-hour battery life. Zoomer uses three AA alkaline batteries.

Casio and Sharp were flanked at the Zoomer announcement by a number of software partners, including GeoWorks in Berkeley, Calif., which has supplied its Geos object-oriented graphical user interface operating system to the unit; and Palm Computing in Los Altos, Calif., which developed the organizer's core applications: a date book, address book and to-do list manager.

In addition, America Online, Inc. in Vienna, Va., has worked with Casio and Tandy to develop an interface to its on-line information network. And Intuit in Menlo Park, Calif., has supplied a "pocket" version of its Quicken financial management software.

In related announcements, Motorola, Inc. announced plans to develop a version of its Embarc wireless data service for the Zoomer, and SunDisk Corp. in Santa Clara, Calif., said it would provide low-power, flash technology-based Personal Computer Memory Card International Association mass storage cards for the Zoomer.

Sybase to deliver Replication Server

Software will provide unified view of distributed data across enterprise

By Kim S. Nash
EMERYVILLE, CALIF

Sybase, Inc. plans to unveil today a critical piece of System 10, its latest database architecture, that is expected to point to key differences between its take and rival Oracle Corp.'s take on client/server computing.

Long awaited by users, Sybase's Replication Server was designed to give users a coordinated, global view of data spread across different geographic and/or technological locations, analysts and users familiar with the product said. To be priced and sold separately from the SQL Server 10 database engine, Replication Server can also help different departments share up-to-date information.

Server sites

Sybase delivered the first System 10 piece to several beta-test users in April. OmniSQL Gateway is a data-access product that lets users query and retrieve information stored on Sybase SQL Server, IBM DB2 or Oracle databases at different locations. The Oracle and SQL Server versions start at $2,500, while the DB2 edition starts at $51,260; all range in price up to $102,460.

Oracle's Oracle 7 database accomplishes similar goals but takes a different tack on the distributed model. Oracle 7 uses functions, such as triggers and snapshots, in its database engine to replicate data across different servers. Oracle will charge users extra for those features.

"The Sybase approach is a very viable alternative to Oracle," said Colin White, analyst at Database Associates in Morgan Hill, Calif.

No verdict yet

However, because neither Oracle 7 nor Sybase System 10 is up and running in full force yet, the jury is out on which company "hits a performance or data availability high," White added.

Several Sybase user group attendees have put Replication Server at the top of their wish lists [CW, May 3]. Although the product will not be generally available until late this year, some users such as The Chase Manhattan Bank NA will receive early copies.

"This is a major product for us," said Gene Friedman, vice president of applied technology at Chase. The New York-based bank plans to use Replication Server extensively in several areas as part of a large distributed computing project [CW, May 24].Chase will get copies of Replication Server this month, Friedman said.

Sybase has gradually unveiled pieces of System 10 since announcing the product line in November 1992. The SQL Server 10 database engine is not expected to ship until the end of the year.

In a separate matter, Sybase last week said its APT Workbench, a tool that helps users develop 32-bit client/server applications, is available on new platforms. The tool now runs under Sun Microsystems, Inc.'s Solaris 2.1, Digital Equipment Corp.'s AXP OpenVMS and MS-DOS.

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News Shorts

Artisoft board fires founder

The board of directors at Artisoft, Inc., the Tucson, Ariz., vendor of network cards and LANtastic, a leading peer-to-peer PC network operating system, has unceremoniously dumped C. Jack Shoof, the company founder, as chief executive officer and chairman. The board replaced him with President and Chief Operating Officer William Keiper. Although Artisoft's earnings have slumped in the last two quarters, sources close to the company cited "differences in managerial style" as the reason behind the termination.

HP drops the Ethernet price floor

Hewlett-Packard Co. announced last week what may be the least expensive Ethernet local-area network adapter on the market. The $119 (list price for individual card) 10Base-T adapter competes with similar cards from market leaders 3Com Corp. and Standard Microsystems Corp. that range from $150 to $200. Though HP is a small player in the market, this move could spark a new round of vendor price cutting, observers said. Soon the price cuts are unlikely to matter to some purchasers of new PCs: Manufacturers have said they plan to include Ethernet connecters on the motherboards of future PC models.

Copper FDDI hits hubs

Cabletron Systems, Inc. said it will announce today networking modules for its smart hub and desktop adapters that allow users to leverage the cabling economies of the neophyte 100M bit/sec. Fiber Distributed Data Interface over unshielded twisted-pair technology. A four-port hub module is priced at $3,695, and an eight-port version costs $6,695. Cards range from $995 to $1,395, depending on the PC bus.

New servers from NCR

NCR Corp. added a mix of Intel Corp. 1486 and Pentium-based System 3000 servers to fill gaps between its low- and high-end offerings. The 10 Unix-based servers, ranging from the new low-end System 3410 uniprocessor to the 16-processor System 3575, have been bundled with NCR's fault-resilient LifeKeeper FRS software. NCR, which tallied $1 billion in System 3000 revenue last year, has begun shipping the 486-based machines, while the Pentium-based servers are scheduled for general availability in the third quarter.

Novell router matures

Increasingly enterprise-minded Novell, Inc. enhanced its software-based multiprotocol router last week with source-route bridging for IBM protocols and a router version that bundles wide-area network links into the routing package. Previously, users had to buy WAN connectivity separately.

Elementary, my dear computer

Last week, grade-school students at the Orion School in Redwood City, Calif., built a multimedia PC as part of a program to teach them about technology. No word yet on how the PC reacted when a first-grader tried to feed it a cookie.

SHORT TAKES BF Goodrich Aircraft Wheel and Brake Operations will use Cincom Systems, Inc.'s Control:Manufacturing software to standardize on Digital Equipment Corp. VAXs. . . . Prodigy Services Co. is positioning itself as the link between cable TV operators and producers of interactive products. . . . Motorola, Inc. said its Electronic Mail Broadcast to a Roaming Computer wireless net service will support Hewlett-Packard's 100LX handheld computer. . . . The Stolen Computer Registry, a clearinghouse for data on stolen computers, is accessible by modem.

Re-engineering the railroad

Canadian operation upgrades host to improve customer service

By Johanna Ambrosio and Rosemary Cafasso
MONTREAL

Canadian National Railways (CNR) is making the politically incorrect move of installing mainframe software to get its traffic-management system back on track. When the $100 million job is completed in early 1995, the railroad will have replaced about one-third of its major production applications with updated versions.

"I realize this sounds heretical," said Ronan McGrath, vice president of information systems and accounting at CNR. "But this is a 200 MIPS system, and client/server is not yet suitable."

The new software, called Transportation Support System (TSS), uses IBM's DB2 database management system and is written in Software AG of North America, Inc.'s Natural fourth-generation language. To run it, CNR will upgrade its 3000 mainframes to an as-yet-undetermined large model of IBM's Enterprise System/9000 family.

CNR is purchasing TSS from Santa Fe Pacific Corp., a railroad company in Schaumburg, Ill. [CW, May 31]. This is the first sale of TSS, said Santa Fe Vice President Chuck Shultz; Santa Fe just implemented TSS last year and is still writing and installing some parts of it, he added.

The major part of TSS, traffic management, will help CNR improve customer service. Like other railroads, CNR has recently started to provide customized contracts that specify how and when a cargo will get from one point to another. That level of service requires CNR to bill an automobile manufacturer for the transportation costs of a specific car, for example, and to report to customers if there are any problems along the way.

But back in the 1970s, when CNR's current systems were implemented, the main idea was to save costs by piling as much cargo on a train as possible.

In addition to this traffic-management component, TSS includes integrated programs for billing, invoicing and other functions. All will replace existing CNR systems. The new software, in turn, will have to be translated into French and then interfaced with other production systems for payroll, accounting and finance. Although McGrath declined to specify what CNR is paying for the software, he said the cost of interfacing it to the rest of CNR's production systems is greater than that of the package itself.

While it installs TSS during the next 18 months, CNR will also build a graphical user interface for end users, likely to be based on Microsoft Corp.'s Windows NT operating system.

"This is assuming NT reaches an appropriate level of production ability," McGrath said. A decision of which desktop environment to use will not be made until late next year, he added.

Central IS

CONTINUED FROM COVER 1

one hand, this approach embodies decentralization by giving hordes of increasingly sophisticated users a powerful platform and an unprecedented entree into corporate information. On the other hand, its alarming potential for time- and money-wasting duplication of effort begs for central oversight.

For example, the need to root out duplicated effort is spurring firms to centralize the management of efforts involving architecture, strategy definition, quality management and coordination between central IS and what has been rolled out into business units, said John Morency, principal consultant at Strategic Networks Consulting in Rockland, Mass. Bankers Trust Co. is apparently taking that approach.

"With client/server, there is no way you can survive without centralization," Peterson said. "It may not be massive, but you do need coordination."

Hellene Runtagh: *GE has a 'passion for integrated diversity'*

In Chicago, Commonwealth Edison Co. is in the early stages of implementing a client/server system. Eventually, supervising analyst Phillip C. Yandel said, about 50% of its 19,000 employees are expected to be up on the Novell, Inc. NetWare-based local-area network. Centralized management, Yandel said, is also in the game plan.

"Supposedly, we were already centralized," he said. But pockets of lone-wolf developers and programmers had sprung up within the IS ranks during the years. In fact, Yandel said, the client/server system is being implemented in part to satisfy the yen for more sophisticated applications and easy corporate data access.

Putting the chief information officer in charge of the client/server operation, he said, is calculated not to rein in the lone wolves' creativity but to ensure that it is being exercised with the most efficient use of precious corporate resources. "We're hoping to give them the thrill of hacking while we keep the control we need," he said.

There are questions in large IS shops about what should be centralized, Morency said. The struggle to answer those questions is forging new kinds of IS leadership. "What we're beginning to see is the CIO acting as a sort of in-house outsourcer," he said.

For instance, when one of General Electric Co.'s product divisions recently cast about for IS-enabled ways to enrich customer service, the group's IS head was unaware of a client/server inventory management system linking GE's lighting and appliance divisions to customer sites and letting them satisfy specific customer demands with unprecedented speed and accuracy.

But the products business got clued in via GE's Information Management Council, a centralized IS consultancy and strategy group made up of CIO Hellene Runtagh and GE's 15 business IS heads. It meets at least quarterly and communicates electronically each day. Using skills and resources already honed in the lighting and appliance IS groups, the anonymous products group "is putting in a vendor management system as we speak," Runtagh said last week.

But "the decentralized aspects [of IS] are alive and well at GE," she said, adding that her title reflects GE's "passion for integrated diversity: Leverage central IS, but only where it makes sense."

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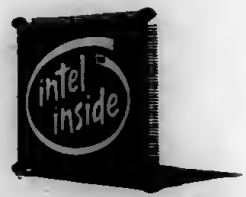

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Workgroup computing

Apple servers win kudos but users hunger for more

By James Daly

Corporate information systems managers who have slid Apple Computer, Inc.'s trio of new workgroup servers into place already have some feedback for Apple: Nice job, but they cannot wait until new models based on the speedier reduced instruction set computing-based PowerPC chip come out early next year.

The Motorola, Inc. 68040-based server is "a wonderful machine, but I don't think Apple went far enough," said Dr. Warren Young, director of neuropharmacology computing at the Scripps Research Institute in La Jolla, Calif.

Young, who works with two models that service the needs of more than 200 researchers and scientists, said Apple could have done a better job with remote administration functions, particularly in terms of smoothly disconnecting a user from the server.

And while initial satisfaction runs deep, users were also quick to point out areas in need of improvement. These ranged from pleas for better audit trails to complaints about the key slot.

"When you twist it one way, it locks the machine. But if you twist it the other, it turns it off," said Michael Keithley, who manages a Model 95 as IS director at Creative Artists Agency, Inc. in Beverly Hills, Calif.

That is not to belittle what Apple has already done. In the past few weeks, power-starved corporate Macintosh users have listened anxiously for the squeal of braking delivery trucks hauling Apple's first true dedicated server, the high-end Workgroup Server 95, as well as beta-test versions of the Workgroup Server 60 and 80.

> "I can have someone who doesn't even know what Unix is managing this thing."
>
> — *Michael Keithley*
> *Creative Artists Agency*

Many users say the workgroup server line will add much-needed processing power to setups that had reached their limit. The servers are based on enhanced versions of the Macintosh family's high-end Quadra, but they contain elements to enhance their specialized role as servers.

A special processor-direct slot, for instance, helps provide fast hard disk I/O. A second-level memory cache cuts the time the microprocessor spends getting information from random-access memory.

The hardware is driven by a server version of A/UX. Apple's version of Unix, which delivers high-performance network services to data-intensive workgroups of as many as 50 simultaneous users. The servers are targeted at workgroups ranging from five to 200 workers; prices start at $3,079.

In the making

Apple reportedly plans to introduce workgroup servers targeted at specific tasks. The company has started down this road with the Model 95, which has an optional configuration designed specifically for a database environment.

Willing to wait

Although new power is always a potent lure to users, Apple could face slower than anticipated acceptance of the servers from users willing to wait another six months or so for the new PowerPC-equipped models. "There are many people out there who are drooling for these machines with a PowerPC chip, and I'm one," said one technical manager.

The Macintosh's legendary reputation for ease of use could appeal to users entwined in creating a client/server architecture. "I can have someone who doesn't even know what Unix is managing this thing," Keithley said.

Many users said they will also be freed from the typical headaches associated with server setup and maintenance. Of particular importance is savings in the area of "soft costs" — installation, service and support. A cost/benefit analysis issued in January by Gartner Group, Inc.'s consulting services in Stamford, Conn., said the life-cycle cost of maintaining a Macintosh for five years is $4,000 less than a PC running Microsoft Corp.'s Windows and nearly $10,000 less than a DOS system.

Those are dollars-and-cents issues to which IS managers can relate.

"When I think of trying to operate a Unix server, I think of seven programmers constantly trying to keep the thing going," said Brian Comnes, manager of the information center at Airways, Inc. in Redwood City, Calif. "Apple's server can provide a lot of the same capabilities without a lot of fuss, so it could really change our life."

Falls short

It can provide a lot of the same capabilities — but not all. Some are willing to wait for the models based on the more powerful PowerPC chip because the current crop of workgroup servers is just not powerful enough.

"They're nice, but I'm not getting rid of my Sun [server] just yet," said James Yip, manager of technical services at Ernst & Young in Toronto.

Although few of the new Macintosh servers are actually up and running, buyers had no shortage of plans for the new machines. Most users are employing a mix of homegrown and store-bought software and are developing long-term plans for custom software.

CA revs manufacturing software

By Thomas Hoffman

ISLANDIA, N.Y.

Computer Associates International, Inc. significantly bolstered its flagship manufacturing software line last week by announcing plans for Unix and client/server versions of its shop-floor packages.

Many of the new features, including the ability to place blanket purchase orders and paperless shop-floor orders (see story far right), were warmly received by several of CA's 1,300-plus manufacturing software users.

Van Camp Seafood Co. in San Diego recently customized its CA-PRMS Version 8.2C shop-floor package by integrating its batch-order entry module with increased electronic data interchange (EDI) capabilities through a special arrangement with CA, said Jack Boyle, the seafood firm's director of MIS.

Boyle said he was interested in several of the new modules added to the latest release, CA-PRMS 8.3, including blanket purchase orders and an "orderless" shop floor, a feature that allows users to generate work orders with less paperwork and maintenance.

But because Van Camp upgraded to CA-PRMS 8.2C in December, the company has no immediate plans to upgrade to versions 8.2F or 8.3, Boyle said.

The new features appear to have arrived too late for at least one CA-CAS user. Sherwin-Williams Co., the Cleveland-based paint company and a longtime user of CA-CAS, canceled its CAS maintenance contract last fall because CA was too slow to introduce enhancements to the shop-floor suite, according to Jim Cleveland, Sherwin-Williams' manager of data management services.

Sherwin-Williams continues to run and maintain CA-CAS Version 1.3 in its Amdahl Corp. mainframe environment, Cleveland said. But the paint supplier grew restless waiting for significant enhancements to arrive on CA-CAS and instead modified it by splitting its inventory control procedures.

Cleveland said he was dismayed at what he felt were a lack of enhancements made to CAS Version 1.4 in 1992. Cleveland described CA-CAS as "a functionally rich product that just stagnated."

CA plans to port its CA-CAS shop-floor manufacturing package to Hewlett-Packard Co.'s HP/UX Unix environment by the end of the year, according to John Capobianco, director of business applications. He said CA will later port CAS versions to IBM's AIX environment and other Unix platforms. CA-PRMS will be ported to Unix by mid-1994.

Still, several users said they plan to migrate eventually to CA-CAS 3.0 because the latest release contains a 21st century date support mechanism. Users of CAS versions 1.3 and 1.4 whose systems run on a 20th century calendar likely will face system crashes unless they move to the newer release or migrate to other packages, industry observers said.

Boyle said CA's plans to deliver CA-PRMS on desktop environments with graphical user interface (GUI) tools appeals to Van Camp because the company has several networking projects planned between its host IBM Application System/400 Model D60 and its PCs during the next year.

"Further integration [of manufacturing software] to the desktop seems to be an industry trend, so CA seems to be right on the leading edge with that," Boyle said.

Analysts also lauded CA's plans to deliver its manufacturing products on Unix and GUI database-independent client/server platforms because the industry is expected to shift its reliance from midrange and mainframe computers to distributed environments in increasing numbers during the next few years.

New lineup

- **CA-PRMS 8.3:** A shop-floor control package for AS/400s made up of 25 different modules. New modules include an orderless shop floor and blanket purchase orders. Beta testing began in early April. General availability by September. It will be priced at roughly $15,000 per module.
- **CA-CAS 3.0:** An enterprisewide manufacturing system for MVS, VSE or VM systems refreshed with new features such as sales analysis and operational performance measurement capabilities. Beta testing began in January. General availability next month. Priced at $80,000 to $100,000 per module.
- **CA-PRM9:** Order Configurator: A rules-based product configurator designed to create customer orders based on specific requirements. Slated for early shipment this summer.
- **CA-PRMSVision:** A Microsoft Corp. Windows-based decision support system. Beta testing began in March. Shipments planned for late summer.
- **CA-CAS:EDI:** A Windows-based facility designed to speed administrative and maintenance processes using EDI with suppliers. Beta testing since October, it is due for early shipments next month, with general availability in August.

Fed officials pan ban of old encryption specs

By Gary H. Anthes
GAITHERSBURG, MD

Federal officials responsible for shaping information security policy said last week that legislation mandating use of the government's recently proposed encryption technology — and banning the use of older but popular techniques — is neither wise nor likely.

In April, the White House said it intended to establish as a federal standard an approach to encryption called "key-escrow." This method would require that the keys needed to unlock a coded conversation be kept by government-approved agencies and retrieved only for court-approved wiretaps.

Dubbed "Clipper" for voice communications and "Capstone" for data, the approach is intended to balance the conflicting objectives of users — who demand absolute security and privacy — and law enforcement agencies, which are looking for a legal "backdoor" into coded criminal communications.

Protecting rights to privacy

But the idea has been challenged by civil libertarians who fear abuses by a technologically empowered Big Brother, and by some users, especially those such as banks that have made large investments in cryptography based on the older Data Encryption Standard (DES), which some fear could be banned by the government.

Protesters so far include the Computer and Business Equipment Manufacturers Association, Information Technology Association of America, Computer Professionals for Social Responsibility, Electronic Frontier Foundation, Business Software Alliance, Software Publishers Association and Information Systems Security Association.

Raymond Kammer, acting director of the National Institute of Standards and Technology (NIST), acknowledged that a ban on existing techniques would be considered. "But my personal opinion is, I can't see doing anything that would take away any freedoms we now enjoy," Kammer said.

"We tried to come up with a technique that would *not* require legislation," said Clint Brooks, adviser to the director of the National Security Agency, which developed and now strongly supports the key-escrow approach.

Brooks predicted it would be years before criminal use of DES would be widespread enough to present obstacles to law enforcement agencies, which cannot crack DES codes. "Let's wait and see if legislation is needed," he said.

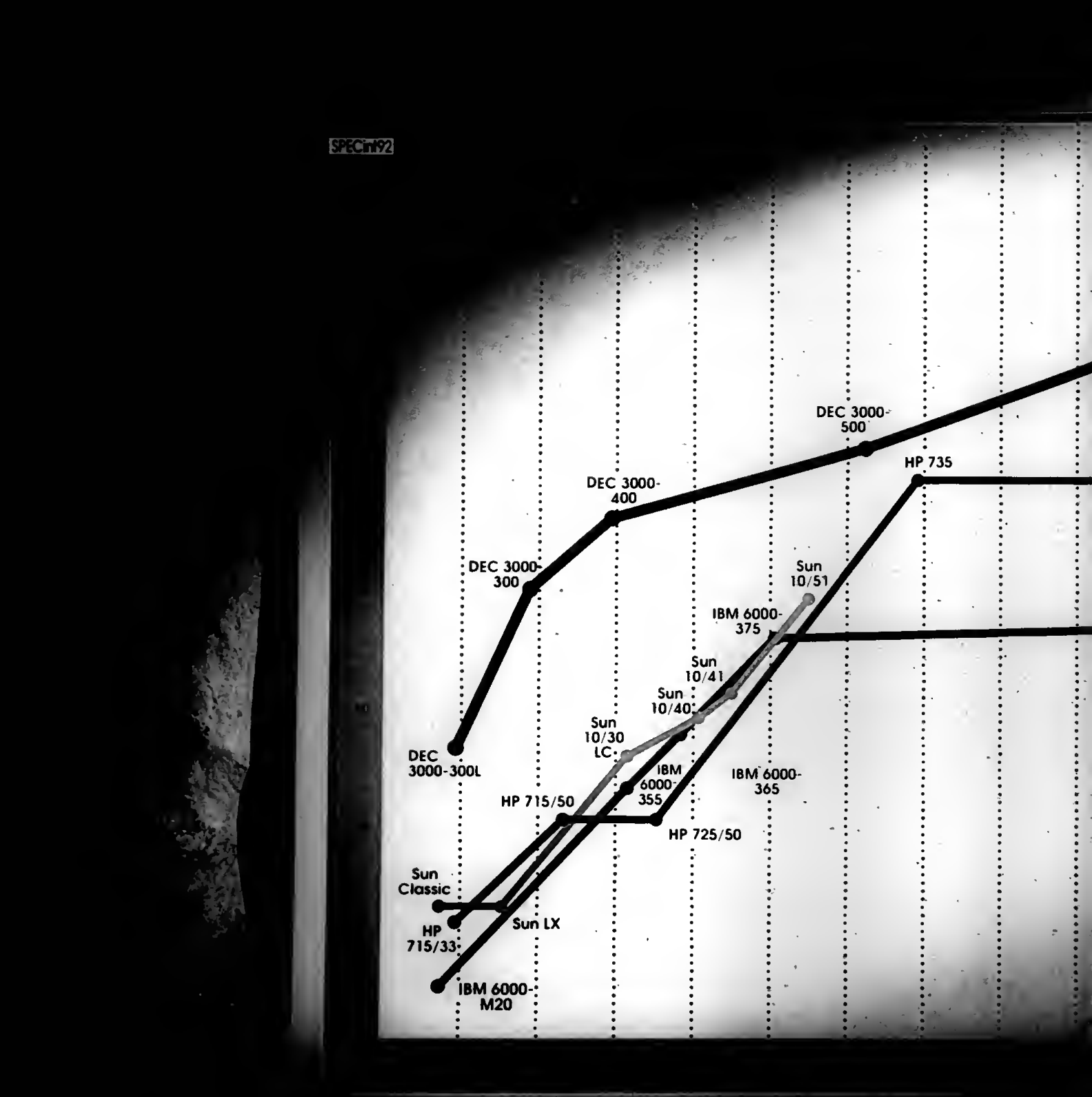
While the majority of those attending a public hearing at the NIST last week spoke out against the government's proposal, a few strongly defended it, saying criticisms are either misdirected or deal with fixable flaws.

Donald Alvarez, national defense science and engineering graduate fellow at Princeton University, outlined six ways that Clipper could be breached but finished by saying, "I definitely believe it is possible to address the needs of both [users and law enforcers], even with the Clipper and Capstone chip sets."

Keyed up

In a statement filed with the Computer System Security and Privacy Advisory Board, Citicorp raised the following concerns about Clipper:

- The private sector was not adequately consulted.
- The algorithm used in Clipper/Capstone is not compatible with other commonly used encryption methods and will cause costly disruptions for businesses.
- The algorithm — which is to be secret but will be examined by a handful of government-chosen experts — "will undergo inadequate scrutiny and hurried review."
- The databases and access systems associated with Clipper may be flawed and insecure.



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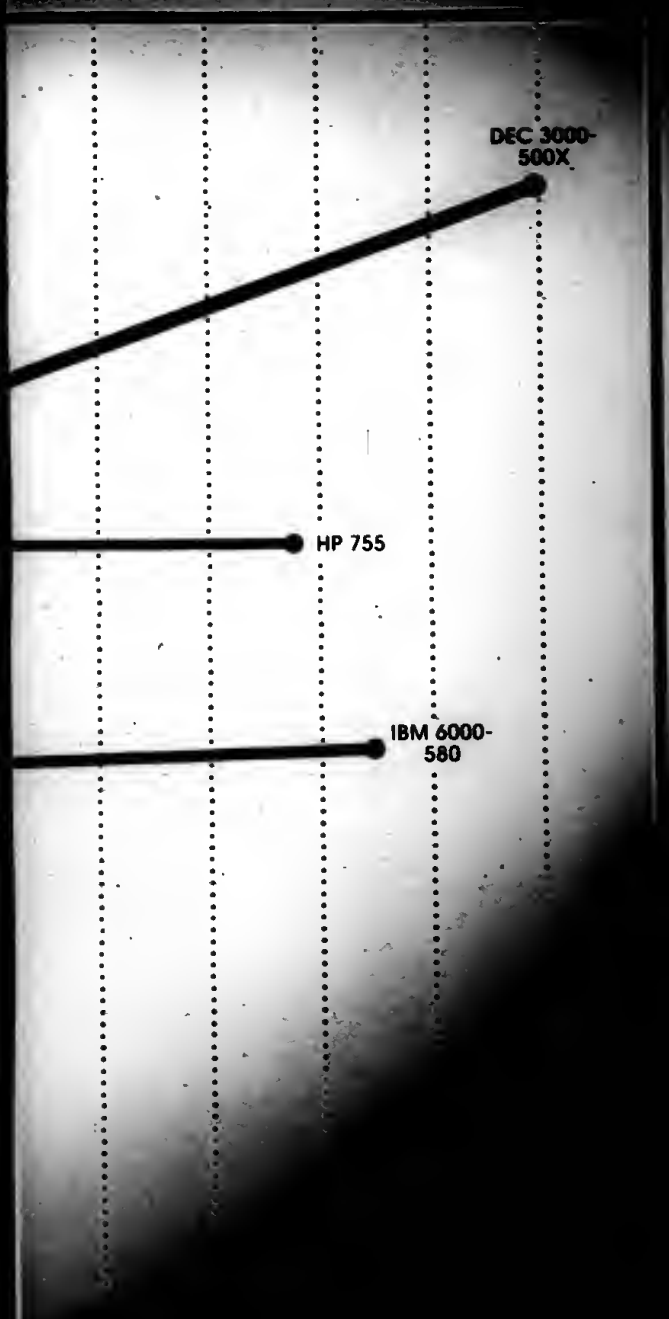

digital

Bean counting

CONTINUED FROM COVER 1

like CPUs, we're looking at decreasing it more, to two or maybe even one year," Kopecky said.

Driving this change in depreciation schedules is a classic good news/bad news scenario taking place in hardware life cycles.

The good news for IS chiefs these days is that computer vendors are so imbued with the spirit of one-upmanship that suppliers are racing to market with faster and better minicomputers and microcomputers at the breakneck speed of every six to nine months.

The bad news is that these product life cycles are so accelerated, they are outpacing users' depreciation schedules.

The result is that vigilant accounting departments can — and often do — put the kibosh on a computer purchase because the not-so-old stuff is still on the books.

"Accountants don't like it when earlier models are obsoleted before they [have] run their full depreciation cycle, and accountants control the money," observed Lawrence Simonsen, MIS manager at Valtek, Inc., a Springville, Utah, industrial valve manufacturer.

"With products coming out faster than depreciation life cycles, it presents a fiscal problem," agreed Jerry Affholter, systems manager at Medstat Systems in Ann Arbor, Mich.

Bob Young

Change needed

In today's competitive climate, when forestalling the purchase of information technology can translate into a strategic slip, IS directors are realizing that where the lead hits the ledger, change is in order.

"It's at the point where you want different cycles on different equipment. CPUs are changing, but peripherals are changing at a slower pace," Kopecky said. Meanwhile, although IVI Travel's move last year to a three-year cycle for all new products will help it keep pace with technology's advances, Kopecky noted, "That still doesn't help me with stuff I bought two or three years ago."

Simonsen expanded on that idea, saying that because accountants are more amenable to shortening cycles for lower cost items, users can more realistically expect to alter the book life of PCs and local-area network servers than of multiuser systems priced at more than $100,000.

In fact, last year, Valtek switched from a three-year to a one-year cycle for PCs and from five years to three for servers, he said. But large systems have been a harder sell to the accounting department. "We plan to go to three years, but right now, they're still at five," he noted.

The main obstacle to shortening product life cycles is the internal Revenue Service, which mandates a five-year depreciation cycle on computer equipment. The IRS will permit shorter cycles, but only if the user undertakes the daunting exercise of proving obsolescence of existing equipment, according to Michael Erbschloe, vice president of Computer Economics, a Carlsbad, Calif., consulting firm.

"It's a complicated, time-consuming task," Erbschloe said. "You have to make a good case, and most people avoid it."

IS shops usually have an easier time proving obsolescence on technical workstations in which vendors make quantum advances in refresh rates from one generation box to the next, Erbschloe said. In these cases, users can usually prove that new workstations will yield fivefold greater performance and greater price/performance gains, he said.

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C., noted that some companies keep more than one set of books. For tax accounting, these companies use IRS-mandated depreciation cycles, but for corporate accounting they might apply more aggressive schedules, he noted.

As a compromise, accountants often agree to a measured approach under which they write off portions of their equipment each year. A typical example, he noted, would entail prematurely writing off one-fifth of all equipment each year on a five-year cycle. Then, the firm does not take a big hit at once.

An IRS spokesman said users can take an accelerated depreciation whereby they take bigger write-downs early in the five-year cycle. But he cautioned that if a computer is used for personal reasons more than 50% of the time, the IRS does not permit the accelerated schedule. He said he is unaware of any IRS plan to shorten depreciation cycles.

Recourse for IS managers goes beyond internal accounting changes. Users have been beseeching their suppliers for help with their depreciation dilemmas. And to some extent, they are getting results, in the form of upgradable eqnipment.

"You buy into a platform you know is upgradable so you're not killed by the five-year depreciation law," Erbschloe noted. "That way, you don't have book losses, and you don't have accounting on your butt. People like to refer to 'Velcro serial numbers,' where you keep your serial number but you change the internal parts of the machines."

Despite the buzz and confusion about redefining depreciation, no one seems to be asking product developers to slow down. Users seem resigned to taking the good with the bad. "What's the alternative? For vendors not to come out with products so quickly?" Kopecky asked.

He supplied his own answer: "No."

Mired in the PC depreciation bog

While the depreciation lag plagues users of all technologies, it is particularly irritating to PC users.

PC prices are plummeting so quickly that the latest and greatest desktop machines are often available for less money than the depreciated value of a company's current mix of slower PCs.

Because the slower goods have a higher book value, accountants want to keep them active because they are a boon to a firm's asset statement.

"It's a catch-22," said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C., consulting firm. "But that's what accounting is all about. It's a joke."

For companies such as Exxon Corp., which has close to 300,000 PCs, the quandary is huge, Dzubeck said.

So while companies may buy new equipment, they do not always send the old stuff to the trash heap or the aftermarket.

"There's a PC at a security desk at TI that I swear to God might have once been an oscilloscope," Dzubeck mused.

And what about software?

Michael Erbschloe, vice president of Computer Economics, noted that because software is often licensed rather than purchased, it is frequently considered an operating expense rather than a capital expense, and thus depreciation does not apply.

But Dzubeck pointed out that users tend to buy, rather than license, PC application software.

"Some accountants believe it's a capital expense," he said.

What is more, he noted, even when a user purchases a license rather than property, depreciation can apply.

"Because of the way contracts are written, you essentially buy it," Dzubeck noted.

While the PC depreciation bog is thick, IS managers are stuck in equally soupy quagmires in other product categories.

For instance, some companies have classified network hubs as part of their physical buildings and have assigned 20-year depreciation terms, Dzubeck noted. Upgrading to emerging Asynchronous Transfer Mode technology will be tricky for these firms.

Likewise, many telecommunications carriers are forced by their regional regulatory agencies to take 20- and 30-year depreciation cycles in order to help keep rates at a near steady level, Dzubeck added.

—Mark Halper

Damned if you do, damned if you don't

What bothers the beancounters, besides the IRS, is the simple economics of it all.

If a company assigns a piece of hardware a five-year depreciation cycle, it writes off 20% of the hardware's value for each of the five years. From an accountant's perspective, getting rid of the equipment prematurely represents multiple jeopardy.

First of all, the company would have to adjust current and earlier financial statements.

And the pain is hardly lessened by selling recently outdated equipment in the aftermarket, where it automatically fetches less than book value, especially once replacement models hit the scene.

"If you buy a $10 million box and sell it, taking a book loss, accountants flip out," said Michael Erbschloe, vice president of Computer Economics.

Not only do profits take a hit, he said, but "the IRS is always curious about selling things before they depreciate. It raises the audit flag."

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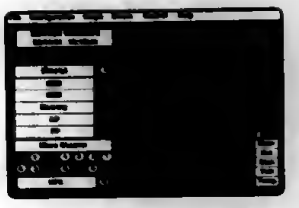
It even tolerates

and recovery capabilities. MASS/2 works with a battery backed-up Remote Maintenance Processor (RMP) option that can notify you of errors, failures, corrective action taken—even provide system access during a power failure. And you can extend fault tolerance to the entire disk subsystem by adding an Orthogonal RAID-5 Disk Array/2.



The MASS/2 option has a user-friendly GUI that lets you distribute computing power across your organization from a central location.

Server 195/295 Comparison

Feature	Server 195	Server 295 Model 1	Server 295 Model 2
Remote Maintenance Processing and Modem	optional	standard	standard
Processors	486/50 MHz	MP-486/33 & 50 MHz	MP-2 486/50 MHz
Available Slots	8 Micro Channel®	12 Micro Channel	12 Micro Channel
MASS/2	optional	standard	standard

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— Bertrand Russell

EXOTIC, eerily familiar fractals. Car-crash simulations. Clinical images that probe the inside of the human body. Computer graphics have opened new vistas in many fields. The striking images on this page illustrate some of the advanced work in simulation, visualization and modeling. Collectively, they also make a fascinating gallery. Enjoy the view.

Modeling complex, dynamic systems. Velocity vectors are used to illustrate the complex flow field around a skier during a jump. Blue represents slow air speed; yellow represents high air speed. (Photo courtesy of Cray Research, Inc. and Fluent, Inc.)

A Julia set fractal. IBM researcher Benoit Mandelbrot coined the term 'fractal' in 1975 to describe the action of iteratively calculating simple mathematical transforms of 'fractional' dimensions. (Photo courtesy of Visual Numerics, Inc.)

A depiction of a column of ozone over the Earth one day in the fall of 1987. (Photo courtesy of NASA Goddard Space Flight Center and Convex Computer Corp.)

Proton radiation beam treatments are precisely delivered to patients at Loma Linda University Medical Center. The screen shows a layout of the radiation dose beam that is about to be released. (Photo courtesy of Sun Microsystems Computer Corp.)

An electromagnetic solution (far right). Designers of a 'stealth' aircraft see how radar and other electromagnetic waves reflect from the vehicle's surface. (Photo courtesy of Cray Research, Inc.)

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Setting priorities

Andrew Tobias, the personal money management specialist, once wrote that few Americans grasp the principle that a dollar *not spent* is worth more than a dollar earned.

Tobias' lesson flashed to mind recently as I listened to the CIO of a health care company talk about how information systems are helping to make his company more viable and shockproof, despite a five-year moratorium on capital investment in new equipment.

The company has priorities other than information technology, this CIO said. If it is going to spend money, it will spend it in areas that impact patients — diagnostic equipment, nursing staffs, upgraded facilities.

In some ways, this organization is an extreme case. The health care industry is under the gun right now. Furthermore, the previous IS regime seems to have been particularly profligate.

Even so, this man is convinced his company and his industry aren't that unique and that IS managers everywhere will soon be asked — no, not asked, but *expected*, to operate like business managers.

Now what the heck does that mean exactly? For several years, every other conference speech, article and consultant briefing have preached the gospel of IS involvement with the business. Is this just one more variation on that tattered theme?

No, I don't think so.

What this CIO seems to be talking about, and what other indicators seem to be pointing toward, is a much more substantive kind of mind-set change. Think of it as the difference between trying to "justify" IS expenditures to an external authority and making the hard decision to apply the brakes yourself.

What we're talking about is the coming of age of IS. Like all passages, it isn't quite what it was cracked up to be, and it is more about self-regulation than new privileges. It's about putting the interests of the business as a whole above departmental priorities.

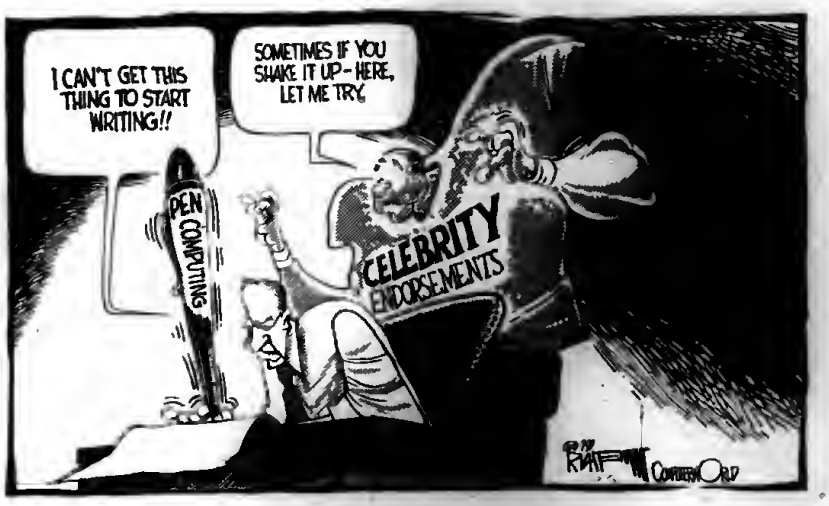
This is a tough time to be shoved into the decision makers' circle. The trade-offs right now are much harder than they've been for a long time. Important technologies are emerging that offer substantial paybacks not only in dollars but also in operating efficiency and quality improvement. Client/server computing, large-scale LAN integration, imaging systems and object-oriented development are all worthwhile investments that are not difficult to justify.

But then, justification isn't the issue anymore. What it comes down to is which of several easily justified investments will produce the biggest return. Is moving all plant sites to Unix workstations and LANs more important than investing in a new fleet of trucks? Sometimes the answer will be yes. Sometimes it will be no. And sometimes it will be an in-between — a gradual rollout, a phased move, something "client/server-like," as a prelude to the real thing.

What it comes down to is this: Being a business manager often means learning to make do.

Joanne Kelleher

Joanne Kelleher, *Features editor*



Don't hold breath waiting for Windows NT

Finally! A few signs of sanity are appearing in the computer industry news media.

Bill Laberis' editorial in the May 24 issue of *Computerworld* looks past the hype and promises to reveal the naked truth about Windows NT. Microsoft has courted the press and promised the moon and stars. The time has come to pnt up or shut np.

I would be a little worried if I were banking my future nn NT, a la DEC. Microsoft is already backpedaling on its promises, and the release date is still undefined.

Even more worrisome, Microsoft is planting stories about Windows 4.0 (Chicago). NT is not even a reality yet, and the company is focusing attention on yet more vaporware.

Given Microsoft's past history nf delayed shipping dates for Windows 3.0, I would invest in carrots and sticks. These are the tools that Microsoft seems to use the most — and something the media seems to relish.

J. R. Beecham
Lantana, Fla.

Wrong standards

Charles Babcock's commentary "The reach of NT" [CW, May 17] was off base in comparing Windows NT with MVS. But the really funny part was the characterization nf LU0 as a standard LU protocol.

LU1 and above are standard protocols. LU0 is defined as the protocol fnr any conversion that does not follow a standard protocol. It has nn standards at all.

David A. Brask
President
Brask Technologies, Inc.
Long Grove, Ill.

Catch this bus

Your readers are being misled by "Vendors support faster EISA" [CW, May 17].

The Micro Channel Architecture was introduced in 1987 at a data-transfer rate of 10M byte/sec. Today it is boasting the highest performance available on any bus out there, including local buses. However, we announced 160M byte/sec. data-transfer rate in February 1992 at BUSCON.

R. H. Zakhariya
President
Micro Channel Developers Association
Redding, Calif.

How quickly Microsoft forgets

If you want evidence for the old adage that great wealth and power can inflate a man's ego, consider the commentary of Bill Gates in *Computerworld*'s "Face to Face" interview [CW, May 24], in which the Microsoft chairman rewrites history.

Gates argues that 12 years ago he "could have taken any hardware model . . . as a standard" for MS-DOS and been successful, implying that IBM was merely along for the ride. Every word I've read on the rise nf the PC in the 1980s indicates that it was a the nther way around.

It was IBM's marketing strength that gave the PC its initial velocity, and IBM's endorsement nf the intel/Microsoft standard that enabled those firms to achieve their dizzying profits.

Certainly let's give Bill Gates the jockey credit for riding his horse to victory with all the finesse and determination nf a champion. But now that he stands in the winner's circle, Bill Gates has taken to grand delusions of having created the horse.

Or worse, perhaps he believes there never was a horse, that he floated to Microsoft's stratospheric capitalization with the wings of a deity. I suspect that Mr. Gates has simply forgotten the details of his mortal triumph.

We are told this is a common transgression among billionaires, but nevertheless it is one I would never have guessed such an intelligent man might make.

Craig D. Singer
Manager of information systems
Redwing Carriers, Inc.
Tampa, Fla.

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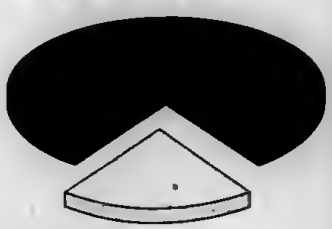

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31. Programming Management, Software Developers
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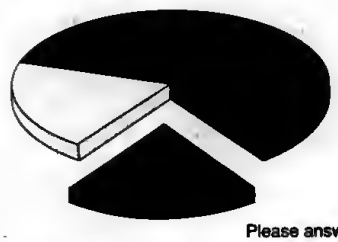

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Get ready to 'morph' yourself

Gary L. Senese

The motion picture industry is abuzz about a technical innovation that allows an image to be smoothly transformed into something very different right before viewers' eyes. Many of us have seen and enjoyed this special effect in recent movies. They've even invented a new word for it — transmorgraphication — a.k.a. "morphing." Most dictionaries don't even recognize the term yet, but it is also an apt descriptor for what is happening to the role of the analyst in IS.

Analyst/programmers are "morphing" into business analysts. This is an extremely difficult shift, one that entails acquiring whole different skill sets and assuming different responsibilities. Not doing it is not an option, however. It is the only way we can continue to add value to our organizations commensurate with our costs.

In the old days, the analyst/programmer (or programmer/analyst for us real old-timers) worried about the capabilities of a particular technology and how to use it efficiently to achieve a desired result. Now, we have more to worry about than bringing unique technology to bear on a specific problem. We have to figure out how to integrate IS into the fabric of the enterprise and actively help functional departments achieve their objectives. Doing this right requires true partnership between information systems and functional departments.

The business analyst must become an accepted member of the functional organization who shares the vision, mission and goals with other associates. This may be assisted by organizational change (dotted- and solid-line relationships) or by incentive systems that compensate all involved for achievement of objectives. The critical factor, however, is how well the job of business analyst is calibrated to the needs of the business.

Business analysts must know and do things that no programmer/analyst ever did. They must have a thorough understanding of systems management, including the systems development life cycle. They must be proficient at project management, technical resource management and vendor management. They must understand functional disciplines, be able to speak and listen cross-functionally and develop enterprisewide vision.

Some will argue that this transformation threatens our heritage and that we are giving up the technical foundations that made us what we are. I respond to that with a loud and positive YES! That legacy has been eroding for years as technology became more available.

Our ability to understand and manage technology is still critical to ensure its effective application. We must recognize that the most important thing is how we use our skills and knowledge to add value to our organizations.

Our value lies not in the application of languages and tools but rather in the use of IS capabilities to drive business performance improvement.

Senese is vice president of management information services at Rubbermaid Commercial Products, Inc. in Winchester, Va.

Interconnectivity: Small gain, big price

COUNTER-INFORMATION *by* Michael Schrage

Interconnectivity has more than one syllable, but it has still become the IS mantra for promising quantum leaps in organizational productivity. Like digital Dr. Doolittles, CIOs swear that if only their computers could interoperate, everything would be just hunky-dory, productivity-wise. Interconnectivity, they insist, is essential to recoup the multimillions invested in their computer systems.

Of course, enterprisewide offerings such as Microsoft's Windows NT, Novell's NetWare and Oracle's System 7 were all designed to cater to this avowed lust for machine interconnectivity. This is what the market says it wants.

Unfortunately, both managers and marketers seem to have a basic misunderstanding about the link between productivity and interconnectivity. We all use a global technology system that is a paradigm of interconnectivity. It's called the telephone network. Just tap a few keys and you can talk to virtually anyone in the world. Reach out and touch someone.

There's absolutely no denying that telephone interconnectivity is a tremendous boon to both personal and organizational productivity. Federal Express and American Airlines absolutely couldn't exist without global voice interconnectivity. But let's be honest. How much time do you spend on the phone that's genuinely productive? 30%? 50%? 75%? What percentage of the calls that you make really matter? What proportion of the calls that you receive make a difference?

Remember how much time you've wasted playing telephone tag? But now there's voice mail, you say. Gee, a voice-mail investment means you're no longer just talking about interconnectivity, you're talking about installing and maintaining an entire data retrieval system. In other words, interconnectivity simply gives you a platform that requires still further investments to get productivity gains.

The analogy holds with network interconnectivity. Everybody wants to share data? Great! Who pays the cost of maintaining and enhancing data integrity? Want interoperable software? Super! Um, which programmers are now responsible for making sure upgraded versions can run enterprisewide? Is interconnectivity something that people can take advantage of for free? Or do they have to pay for cross-platform access?

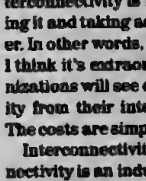
A new way to waste time

If someone slapped a three-minute limit on all our phone conversations, we would certainly become more productive in some ways. Similarly, the ability of my machine to freely interconnect and interoperate with any other machine on the net may have no positive bearing on my productivity at all. Don't forget how much time we waste futzing around with spreadsheets and desktop publishing systems. Interconnectivity may be the best medium yet for enterprisewide futzing around.

The point here is not to devalue interconnectivity. I think interconnectivity is very important. My concern is with managers who cavalierly refuse to understand the relationship between cost and benefits. Interconnectivity has undeniable benefits; it also involves extraordinary costs.

Indeed, although the cost of "installing" interconnectivity is high, the costs of maintaining it and taking advantage of it are even higher. In other words, the cost/benefit is such that I think it's extraordinarily unlikely that organizations will see quantum leaps in productivity from their interconnectivity investments. The costs are simply too high.

Interconnectivity for the sake of interconnectivity is an indulgence — just as a lot of the phone calls we make at the office are. Having PCs doesn't inherently make you more productive, nor does networking them. Productivity doesn't come from transparent interconnectivity. It comes from cost-effective interconnections.



Schrage is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science. His Internet address is schrage@media-lab.media.mit.edu.

Charles Babcock

Chip madness

At a Comdex dominated by Windows NT, there was a strong undercurrent of interest in hardware, especially the impending desktop systems based on the speeds of Pentium, Alpha and the PowerPC.

Pentium has grabbed an early lead and stirred up a lot of interest. Every vendor that could lay claim to a Pentium chip had whipped together a system. But even so, it was possible to come away from glimpses of Alpha and the PowerPC with a sense that IBM and DEC could still become merchant chip suppliers, using RISC to compete with Intel's dominance.

DEC was showcasing the Alpha AXP PC in its floor space by lining it up with an Intel 486/66-MHz PC, a Pentium 52-MHz system and a Mips 4000 SC-50. It test-drove the four PCs by running a common application concurrently. For each of four application runs, the 150-MHz Alpha PC finished first.

IBM, by contrast, seemed to employ a hide-and-seek strategy. In a distant corner of the show, the company had thrown up a hastily assembled display of the PowerPC with two skimpy fact sheets and a screen wired in a purported PowerPC. I say purported because the unit was out of sight below the countertop. For all I knew, those wires might have led to an Apple Quadra because the application running was a Macintosh graphics program. The PowerPC, of course, ran the application faster than the 486-based machine alongside it.

The low-key IBM spokesman, Tom Wilson, agreed his exhibit was somewhat scantily clad, but he pointed out that the PowerPC 601 was the winner of the "Most Significant Technology" award at the show. He handed me a blue button with a surface layer of a PowerPC chip etching and pointed out a microscope where I could occupy myself looking at the chip's circuits.

The PowerPC chip is much smaller than the Pentium chip, a 120mm square compared with a 264mm square, giving IBM the prospect of reaching a higher fabrication output per wafer. Even though it is smaller, the PowerPC has twice as much cache on the chip — 32K — and it runs on something like 6 watts of electricity to Pentium's 14, Wilson said. The PowerPC will sell for $374 per CPU, compared with $950 for Pentium.

All of which may mean IBM can design a RISC chip that is competitive with Intel.

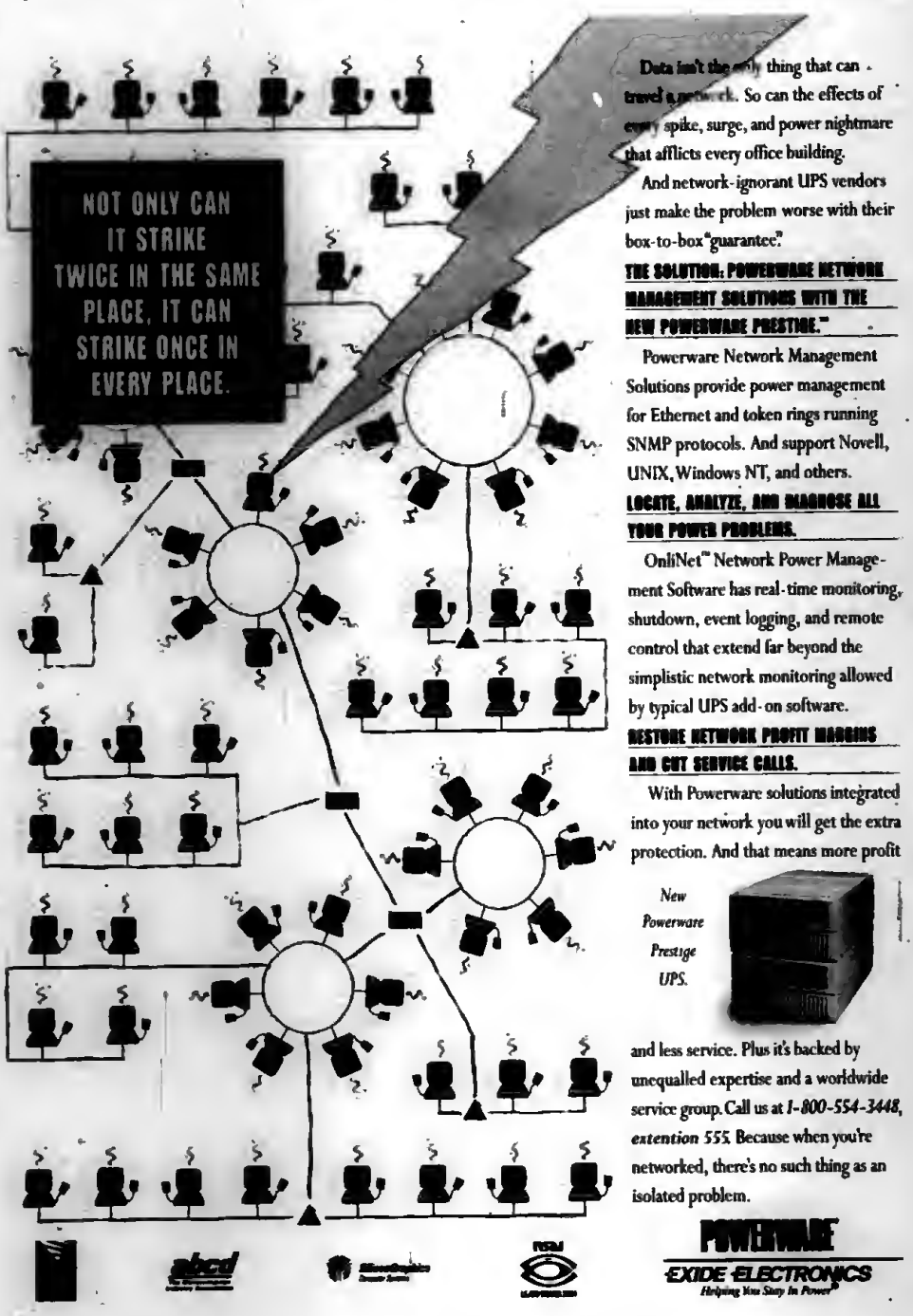
DEC likewise staged an artful comparison to Intel without mentioning the Pentium's reputed egg-frying heat. It encouraged passersby to walk around to the back of its exhibit where an armhole had been created in to an Alpha system. "You can touch the chip and see how it isn't any warmer than this counter," said Jonathan Roskill, the DEC spokesman at the exhibit. Actually, you could touch the chip's heat sink, which, using the circulation of a normal fan, dissipated the heat of the chip. The heat sink felt slightly warmer than room temperature.

Is Alpha faster? The answer is yes, but DEC chose to run applications that are common to its VAX customer base, so the results won't tell a PC user much.

More relevant were the test results detailed by Egil Juliussen, president of the Computer Industry Almanac, at a Comdex session on PC power platforms. Using a 386SX as a base unit, Juliussen had measured integer and graphics output for the Alpha, Pentium and 486DX. He found that the 486DX was five to eight times as fast as the 386SX in integer processing and five to 10 times as fast on graphics processing. Pentium was 15 to 25 times as fast in integer processing and 20 to 30 times as fast on graphics. Alpha was 35 to 40 times as fast on integers and 50 to 65 times as fast on graphics.

None of this is conclusive, but it is an indicator of how hot RISC PCs may become in the near future.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.



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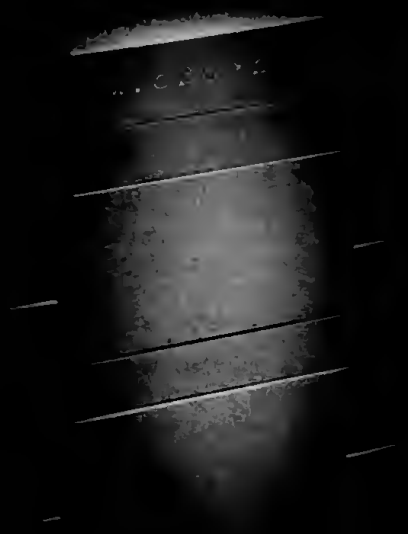

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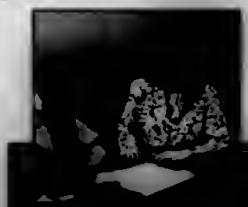

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Data Visualization

Mac users: We want better support

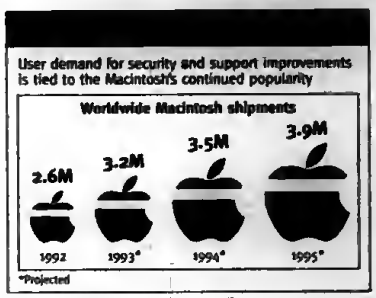
By James Daly

■ With the Macintosh heading deeper into multiplatform environments, corporate customers continue to request better product support and network security from Apple Computer, Inc., according to a recent survey by the MacIS user group.

Demand for better product support offerings headed the group's most recent Top 10 issues survey of its members, drawing endorsements from 71%. Network security ranked a close second with 69%.

Apple delivered its model for support at the recent Enterprise Computing Conference in San Francisco [CW, April 12]. Apple's full program will be a multitiered affair, offering options such as on-site support personnel, personalized training, televised briefing for remote sites, an on-line CD support database and configuration management utilities. The program should be available starting in September, Apple sources said.

Apple will also offer seven-day, 24-hour technical support for its recently introduced servers.



Source: "The Hartsook Letter," Alameda, Calif.

Keep those promises

MacIS members said support has moved into the No. t position in part because Apple presented its strategy. Users interviewed said they are impressed with the Apple plan and want the company to make good on its promises.

"In the past Apple's support has been very lackluster," said Alistair Jacques, director of support and development at Northwest Airlines in Minneapolis. "But the signs are very good at this point that this will change. It's very heartening—if they deliver."

The plans also represent a quantum leap away from Apple's past indifference about providing industrial-strength enterprise support. "Apple is now talking about things they wouldn't have even known about two years ago," said Robert Keim, director of information management at Arizona State University in Tempe. "It's a really significant awakening."

The remaining concerns on the MacIS "priority issues" list for Apple include the following:

- Unify and enhance network security; improve hardware security.
- More effectively communicate Apple's PowerPC strategy by releasing more information (i.e., how it will be positioned against Intel Corp.'s Pentium chip and Microsoft Corp. Windows NT products). Provide support for the transition to PowerPC.
- Ensure cross-platform support, providing more information and making other Apple services uniformly consistent with the Apple Open Collaboration Environment.
- Deliver full documentation for the Virtually Integrated Technical Architecture Lifecycle (Vital) in electronic formats, instead of just in unwieldy paper volumes. Also, form a Vital consortium to improve and expand Vital marketing efforts.

Macintosh users, *page 46*

Bye-bye, VAR?

Vendors' electronic distribution systems could forever change users' buying habits

By Michael Vizard

Slowly and inexorably, the buying habits of most purchasers of PC software are about to undergo a radical change as Microsoft Corp., IBM, Novell, Inc. and a variety of third-party players begin to put in place electronic software distribution systems.

At the recent Comdex/Spring '93 show, both Microsoft and IBM showcased electronic software distribution systems that PC software vendors said have the potential to fundamentally realign the various channels that make up the software market. This is because the systems would encourage customers to purchase software directly from the vendor rather than through a reseller.

Specifically, Microsoft said that by the end of this year it will deliver technology, code-named Hermes, that will be able to monitor and distribute software to individual clients using a Windows NT Advanced Server system.

Downloading updates

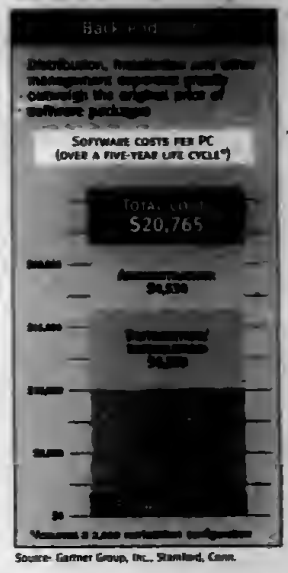
Hermes, demonstrated at several user gatherings in recent months, will include client software that will essentially identify the software packages and configurations of each PC system attached to the network. As a result, a network administrator will be able to download a software update to all users on the network who have a specific version of a particular software package.

IBM, meanwhile, demonstrated a similar capability running its LAN NetView offering on top of OS/2, and Novell already has a service for tracking software that has been downloaded from a NetWare server.

The advent of these electronic delivery systems, along with the growing interest in CD-ROM as a medium for storing software, promises to change the buying habits of most PC users. Instead of purchasing floppy disks loaded with an individual software package, users will be able to purchase multiple software packages on a single CD-ROM disk.

"Every one of our major customers is talking to us about license management and software distribution," noted Sharon Stoffolano, director of systems development at Corporate Software, Inc., a software distributor and integration service in Canton, Mass.

As customers move more toward a site licensing model, organizations are expected to deploy CD-ROMs on a server that individual users can then browse. When a customer decides to purchase a specific software package, it can call the software vendor and have an electronic key downloaded to it that will remove the encryption



Source: Gartner Group, Inc., Stamford, Conn.

software for that package from its CD-ROM server.

This transaction will then be recorded using the electronic delivery systems developed by IBM, Microsoft and Novell. Billing will automatically be integrated with a customer's purchasing system.

Slow to move

But most customers are just beginning to get their arms around site licenses, and very few of them have begun integrating their software purchases with their purchasing systems.

"Most people want to take advantage of site license deals, but they are not yet ready for electronic delivery services," Stoffolano said. "We're working on building a strategy for electronic delivery

Electronic distribution, *page 43*

HP releases new PCs

By Michael Fitzgerald
SUNNYVALE, CALIF.

Hewlett-Packard Co. last week continued its bid to become a serious player in the PC market, releasing 54 configurations of five new models of desktop PCs.

The Vectra 486M, 486MI and 486XM series will ship this month, and a Vectra Pentium is slated to appear in the fall. HP also said it will introduce the Vectra N and NI this month.

Notable features include a proprietary local bus graphics design, standard infrared on the high-end 486XM series and the option to include Personal Computer Memory Card International Association (PCMCIA) slots on the XM and MI. The MI, NI and XM feature a 10Base-T connection on the motherboard. Prices will range from $1,169 to $3,749.

Features such as PCMCIA slots drew the interest of users such as Larry Cook, microcomputer systems administrator at Eaton Corp.'s Truck Components Operation/North America.

Built-in PCMCIA slots "would be of interest to us," said Cook, who has several end users of HP's PCMCIA-capable 95LX palmtop.

Reseller focus

Jeffrey Henning, analyst at BIS Strategic Decisions in Norwell, Mass., said HP "is becoming a very serious player, and they're doing a lot of innovative stuff for a player of their size."

HP's focus on distributing through resellers, where its strength in printers makes it a significant player, has helped it get PCs into retail chains such as Inacom Corp. that usually focus on the Big 3 PC companies: IBM PC Co., Apple Computer, Inc. and Compaq Computer Corp.

"HP PC sales have really ramped up in our stores, and we like them — they're like dealing with Compaq of old," said Rick Inatome, Inacom chairman. Inatome said HP's ability to ship has been a bright spot during the current PC backlog crisis.

Still, Henning said HP needs to add notebook computers to its product line before it will have a serious shot at cracking the Top 5 PC makers.

Christopher Lindquist

Pump down the volume

I have just survived yet another Comdex week. Fortunately, it ended right before the long Memorial Day weekend, so there's been time for the ringing in my ears to fade and the swelling in my hand from handshaking to subside to the point that I can type again.

This year's Comdex/Spring '93/Windows World was one of the noisiest in memory. Multimedia presentations pumped through thousands of watts of amplification, thanks to an endless stream of Windows and OS/2 events. Next time I'll bring my earplugs.

The decibel level went up accordingly on bulletin boards, too. Seems some people got the idea that Windows NT and OS/2 2.1 were actually (snicker) *released* at the show. These gullible folks were wondering why they hadn't been able to pick up their new favorite operating system at Egghead yet.

Some wiser and more knowledgeable users informed them that they had at least a couple of weeks to wait for OS/2 2.1 and perhaps three months for Windows NT.

The IBM and Microsoft announcements also fueled the debate over "What should my next operating system be?" on several boards. Every poor user who posted a question like that was soon set upon by the forces of good and evil (who's who depends on your prejudices), all trying to win another convert to their faith.

The arguments for and against each operating system were not focused on any particular area but ranged from elegant soliloquies on architecture to vitriolic personal attacks on support staffs and CEOs. At least one Windows NT beta-test user wondered whether Bill Gates would stick to his word to not ship the product until beta-test users stopped complaining about bugs: "He promised that NT would not be released until we all did not have any more 'bugs'! It was in the paper at Windows World. He promised."

Of course, if the computer industry really worked at that level of quality assurance, we'd still be word processing on Selectrics.

Meanwhile, OS/2 2.1 beta-test users discussed the final shrink-wrapped version of the updated and improved operating system. Several commented that OS/2 2.1 is what OS/2 2.0 should have been, but better late than never. One beta-test user aired his concern that IBM's technical support is still not up to snuff. Apparently IBM is aware of the issue, and IBM executives were heard at Comdex saying that resources are being devoted to making support a nonissue in the near future.

And speaking of support and operating systems: Know any MS-DOS 6.0 support representatives? Seen them on the street recently? I didn't think so.

Seeing multiprocessor Pentium systems on the floor at Comdex sure made my 386/33 seem out of date. But before I could feel too sorry for myself, I found this on Usenet in alt.folklore.computers: "A certain large American company (which shall remain nameless to protect the guilty) was running its payroll on an IBM mainframe using punch cards for data entry until Dec. 31, 1992. On Jan. 1, 1993, it switched over to a 486-based superserver and PC-based data entry."

I feel better now — but I still want a Pentium.

Tagline: "C makes it easy to shoot yourself in the foot. C++ makes it harder, but when you do, it blows away your whole leg." — *Bjarne Stroustrup, developer of C++*

Anyone else out there still using punch cards? Anyone want to admit to it? If you have a candidate for the title of Methuselah of the Computing World, send it via the Internet to chrisl@netcom.com; CompuServe at 72360,2005; or MCI Mail through 549-8464.

Lindquist is a *Computerworld* West Coast correspondent.

FuziWare spreadsheet for Windows now $99

By Michael Vizard
KNOXVILLE, TENN.

While version management has become a serious bone of contention among the major suppliers of spreadsheets, FuziWare, Inc. is aggressively pushing a vision of spreadsheets that eliminates the need for multiple versions.

In response to competitive pressure, FuziWare has announced that it has dropped the price of its FuziCalc spreadsheet for Windows from $495 to $99.

"The reality of street prices is that all Windows software sells for about $100," said Robert Cathey, director of product marketing.

According to Cathey, FuziWare is targeted at those sites that have to evaluate multiple what-if scenarios using spreadsheets.

Fuzzy logic

Existing spreadsheets require users to create a version that corresponds to every possible scenario. But because FuziCalc uses fuzzy logic algorithms, users can pluga range of data into each spreadsheet cell, creating a range of probabilities across the same spreadsheet.

"Spreadsheets today require users to be artificially precise because you have to pick a specific hard number. With FuziCalc you can build uncertainty into the cells, and the bottom-line output will give you a range of results showing best-case to least-case," Cathey said.

For example, NationsBank in Atlanta uses FuziCalc to help determine which mediums provide the best return for its advertising dollar.

"We usually run a couple of models to determine things like how much time a camera is going to spend on a particular sign at a sporting event. Previously, we had to use guesstimation to review competing proposals across multiple versions of spreadsheets," said John Mauney, vice president of advertising at NationsBank.

PC buyers circumventing IS

Study says 87% of non-IS pros go through other departments

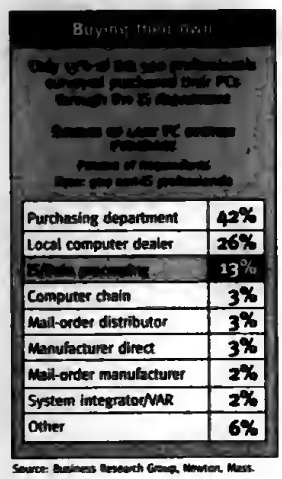
By Michael Fitzgerald

A recent study suggests that information systems departments have less control over buying PCs than one might think.

The study, called "Buying Strategies of the Hidden PC Buyer" and conducted by the Business Research Group in Newton, Mass., surveyed 500 non-IS professionals on how they order PC equipment for the office.

The survey showed that only 13% went through the IS department, making it the third most popular way PCs were purchased. According to the survey, corporate purchasing departments ranked first, with 42% of orders, while resellers were second, at 26%.

No other category was mentioned by more than 3% of those surveyed.



Source: Business Research Group, Newton, Mass.

Warren Childs, an analyst at Business Research Group, said the numbers held across the board for hardware, software and peripherals, as well as for system upgrades and even memory upgrades.

A DOS world

The study also showed that 90% of users use DOS or Microsoft Corp.'s Windows as their base operating system, while Apple Computer, Inc.'s Macintosh was mentioned by 9%.

IBM's OS/2 and the various strains of Unix were each mentioned as desktop standards by less than 1% of respondents, according to the survey.

Tool gives PCs large system file tracking

By Michael Fitzgerald
MONTEREY, CALIF.

A start-up company has devised a way to simultaneously ease hard-drive overload and speed up systems access.

Hybrid Technology & Engineering is now selling Screamin' Demon, a software patch for Microsoft Corp.'s DOS and Windows environments that adds large system file-tracking capabilities to the operating system.

Screamin' Demon lets users track recent file use down to the level of the number of bytes read and written. It moves the most commonly used files to the front of the hard disk, reducing file access time. The byte-tracking feature was designed for people who bill clients by the hour to track their system time exactly.

The program will also do selective backup, storing only those files used most recently. The product comes with a compression algorithm that will automatically compress seldom-used files. It also comes with its own defragmenter and handles application licensing and duplicate tracking.

Screamin' Demon has an introductory price of $39.95. List price will be $120.

faster and easier

an ev

network printing.

Improving printing on the network.

HP offers a range of network printers that meet users' needs for reliability, performance and location flexibility.

Getting the best possible performance from network printers takes more than just hanging printers off a server. It takes a unique understanding of the role of printers in network environments.

From its position as the leader in business printing, Hewlett-Packard has developed a comprehensive strategy for getting the most out of networked printers. It's a strategy that offers simplicity across environments ranging from peer-to-peer LANs to complex enterprise networks.

HP's strategy evolved by looking at the distinct levels of needs within networked organizations. This strategy offers comprehensive network printing solutions by addressing the needs of people at all levels.

Improving network printing starts by taking care of the most fundamental needs—those of the people who use the printers every day.

Just like anybody using a personal printer, end-users on a network require reliability, convenient printer location and good printer performance.

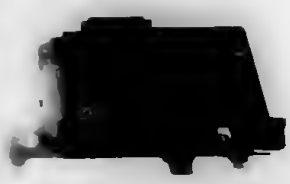
HP answers these needs with a wide range of printers and plotters designed to meet network users' needs. HP LaserJet printers, HP DesignJet plotters, HP PaintJet color printers, and the new HP DeskJet 1200C printers offer a full range of business printing capabilities. And they deliver the consistent, superior output quality that users demand.

HP printers and plotters share another common feature that makes them network-ready. They're built with modular I/O (MIO) slots, allowing direct network connection.

You can plug HP JetDirect network interface cards, or cards from third-party developers, into these MIO slots. Then you can connect printers directly to the network, *anywhere on the network*. So printers no longer need to be tethered to the parallel port of a file server or print server. You can locate printers where they're convenient for the people who use them.

Direct network connection has another big advantage for anyone who's ever waited for a print job to emerge from a shared printer. Data is sent to the printer at network speed, so you can take full advantage of your printer's data processing capability and engine speed. You don't have to pay the penalty of transmitting data through a slower parallel or serial port.

HP's MIO slot is the first step to a consistent network printing strategy that meets such a broad range of needs. It's the reason any HP network-ready printer can connect directly to virtually any PC LAN, UNIX system, or mini/mainframe environment. But what happens when multiple networks come together? Turn the page and see how simple HP makes it.

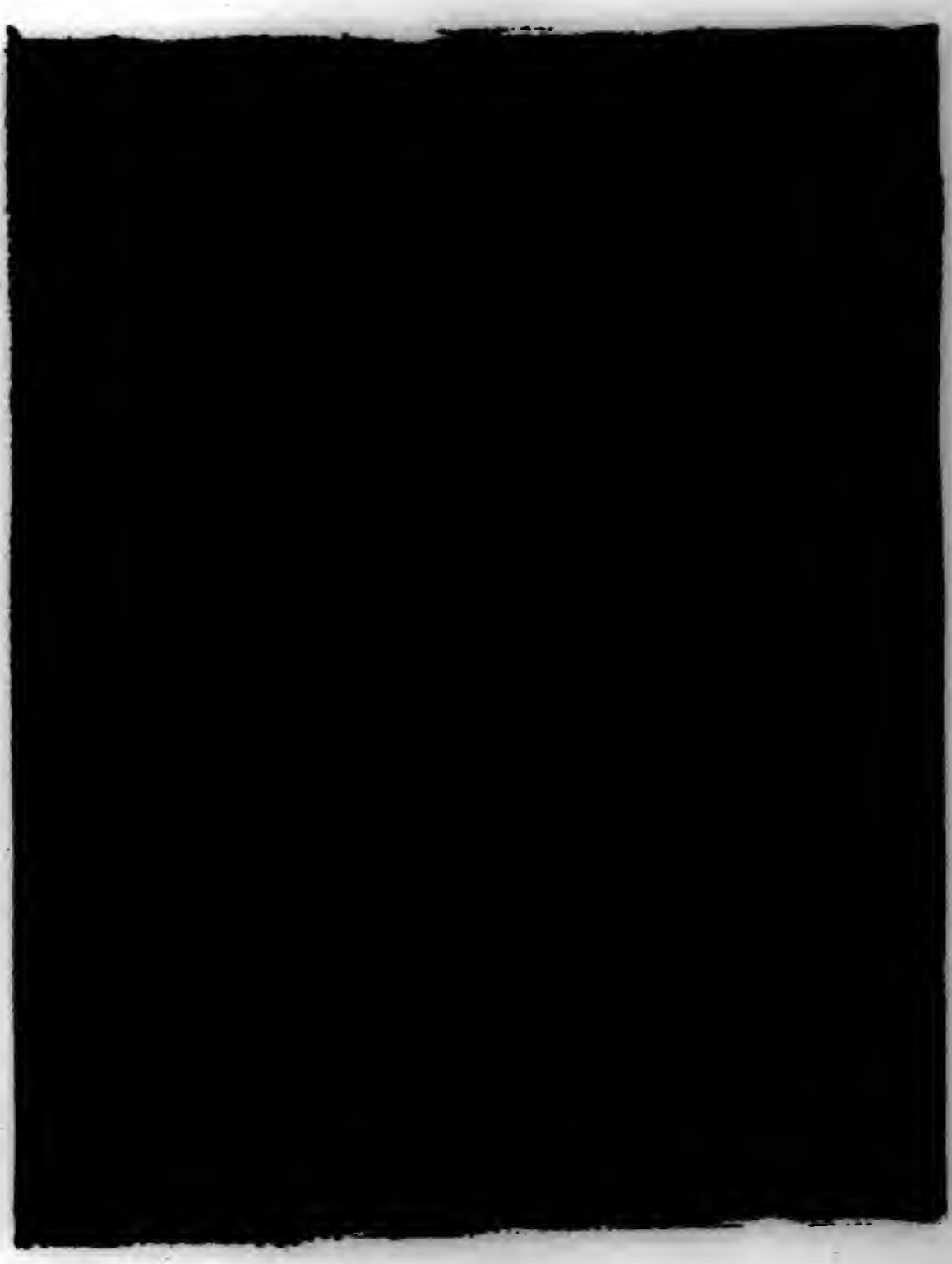


Overcoming the parallel port bottleneck.

When you send a print file over a network, it travels at *network speed* (10Mbits per second in the case of an Ethernet network). But to pass through a parallel port, the data slows down to a leisurely 10–30 Kbytes per second. And that can bring even the fastest printer to a crawl.

In addition, most servers send data through a printer's parallel port one byte at a time — and then check to see if the port is ready for the next byte before sending it. So printing large documents such as those with complex graphics can put an enormous processing load on a file server, and can be painfully slow.

There are two ways to increase printing speed and lighten the load on the server. One is by sending data at network speed all the way from the user's computer to the printer. The other is by sending it in larger packets. HP JetDirect cards and third-party interface cards let your server do both. They receive data in large packets, at network speed. So your HP printers can work at their top speeds, and your file server can dedicate more of its processing power to managing the network.



mplifying the complexities.

IBM LAN Server, HP-UX, SunOS, Solaris, SCO UNIX, AppleTalk, Banyan VINES, and mini/mainframe environments including HP, DEC, IBM and Wang.

But sometimes connecting to one network isn't enough. These days, it's quite common to have more than one network operating system in an organization. And where there are multiple network environments, there are usually frustrations with trying to make everything work together.

So after taking care of the fundamental printing needs of reliability, performance and location flexibility, HP looked at solving the technical issues in complex network installations.

Consider a typical corporate situation. The R&D department uses UNIX workstations, the administrative staff produces PCL documents on a PC LAN and the marketing department relies on a Macintosh network to print its PostScript™ language documents. While the people at the computers work side-by-side in many cases, each network has its own printers, even though one could handle the workload of all three networks.

This is a fictional example, but the situation is very common. And it's a situation that runs counter to the goal of sharing resources, the original idea behind the networking of computers and peripherals.

systems. HP printers are
automatically between HP's
Adobe's PostScript printer languages
(when the printers are equipped with the
PostScript language). And the newest
HP JetDirect cards can accommodate
nearly any PC LAN or UNIX network

HP printers directly to
in existence. The list
Novell® NetWare®, Microsoft LAN
, Microsoft Windows™ for
Workgroups, Microsoft Windows NT,

running on Ethernet or Token Ring. Through close associations with major network operating system vendors — including Novell, Microsoft and IBM — HP ensures flawless printing and maximum performance. For example, HP JetDirect cards are Novell tested and certified.

HP also cooperates with other network interface card manufacturers to provide solutions for other environments, including Banyan VINES networks, and HP, DEC, IBM and Wang mini and mainframe systems. Third-party developers also provide many multi-environment solutions.

Today, HP equips every network-ready printer it builds with an MIO slot, so each can work with virtually any network operating system. It means printers are portable to any environment.

Some solutions even offer automatic network switching, so one printer can simultaneously service all the network operating systems in your organization. And that makes network printing in complex environments as simple as possible.

But you may want more than easy printer connectivity. The ability to manage printers like any other network node is also important. Turn the page to see how HP helps you do just that.

No
range
And
suited to
17-page-per
printer. It comes
of the box for multiple
I/O switching. It can switch
automatically among up to
protocols running on a single
LocalTalk and the high-speed
HP Bi-Tronics parallel port. The
also switches automatically between
HP's enhanced PCL 5 and Adobe's
PostScript printer languages. So it can
easily be shared by nearly anyone.

The entire family of HP network-ready peripherals includes the HP LaserJet 4 and 4Si printers, HP DesignJet 600 and 650C plotters, HP PaintJet XL300 color printers and HP DeskJet 1200C printers. Each is equipped with a modular I/O slot, allowing you to directly connect the printer to your network through an HP JetDirect card or a third-party network interface card.

Install the new HP JetDirect card for Ethernet in HP network-ready printers and you can support 10 different network operating systems. The new HP JetDirect card for Token Ring supports five different network operating systems. Between HP's JetDirect cards and the MIO cards available from third-party developers, HP offers near-universal connectivity.

Many of these printers also
automatic I/O and printer
switching, providing additional
support for multiple network
environments. There are
party MIO cards that bring
network switching
HP printers and plotters.

HP continues to set the standards for business printing.

Over the years, HP has been setting the standards that have been driving the printer industry. For example, HP developed the PCL printer language that virtually every other laser printer manufacturer now emulates. HP also set the standard for print quality time and

NT networks. Because of its wide acceptance as a network management protocol, SNMP compliance is an important element in simplifying printer management throughout an enterprise.

You can use SNMP-based network management software, such as HP OpenView, to troubleshoot remote network printers right from your office.

Managing network printing into the future.

again; first with affordable 300-dpi resolution, then with Resolution Enhancement technology, and most recently with affordable 600-dpi resolution.

Now HP is setting new standards for ease and efficiency in connecting network printers.

Besides the sheer simplicity of the physical connection, HP also makes it incredibly easy to configure printers. HP JetDirect cards are shipped with installation and management utilities for popular network operating systems. For example, a utility for Novell networks lets you remotely set printer front-panel configurations.

HP JetDirect utilities and printer drivers are *built into* the new Microsoft Windows NT system software. HP JetDirect cards also come with software that lets you upload Windows 3.1 printer drivers to a Novell NetWare file server for automatic downloading to end-users' PCs. That can save network managers enormous amounts of time.

Once your printers are set up, HP simplifies the issues of day-to-day printer management. HP JetDirect cards can send information from printers to network management applications, where the printers show up as nodes. So network managers gain remote control over HP network printers.

HP JetDirect cards deliver extensive management capabilities to several networks through industry-standard SNMP (Simple Network Management Protocol) agents built into the cards. Currently there is SNMP support for Novell NetWare, IBM LAN Server, UNIX, Windows for Workgroups and Windows

For example, you can find out which printers are under-used or overloaded, and who is using them.

If you operate a Novell NetWare LAN, you can also utilize the HP JetAdmin software that's included with HP JetDirect cards. It takes advantage of the cards' capabilities to let you see network traffic statistics, diagnostic information and printer front panel messages on your computer.

Network managers aren't the only beneficiaries of bi-directional printer communication. End-users can receive "status readback" information from HP printers on their computer monitors. A printer will tell them when it's off-line, when it's low on toner or paper, or otherwise requires care. Various forms of this capability are built into several operating systems, including Novell NetWare, Windows for Workgroups, Windows NT, UNIX, HP-UX and AppleTalk.

Novell NetWare users can rely on the HP JetPrint utility that comes with HP JetDirect cards. In addition to automatic visual and audio alerts when the printer needs attention, it offers "drag-and-drop" printing and point-and-click printer selection.

By offering the types of capabilities you've read about on these pages, HP has accomplished much of its strategy for network printing. But you can be sure the future holds even more exciting developments as HP works toward seamless enterprise network printing, *from* anywhere, *to* anywhere.

Simplifying the path to the future.

The benefits mentioned on these pages are simple to achieve in almost any network environment. And if you want more details on exactly what to do for your specific network, HP can provide the answers.

If you'd like to improve the performance and location flexibility of your network printers; if you'd like to simplify the technical issues; or if you'd like to improve management of your network printers, HP has technology briefs that can help. These fact-filled papers offer concrete solutions for specific networks. And HP will send them to you, free. For more details, just turn the page.

HP has the answers you need.

Get technology briefs on specific network printing environments, FREE.

No other company offers solutions for such a broad range of computing systems, from PC LANs to enterprise networks. No matter what network environment you operate, chances are Hewlett-Packard and its network printing partners offer you the ideal solution. So you can improve network printing performance, location flexibility and reliability; you can simplify the technical issues; and you can manage network printers more easily.

HP has prepared a library of technology briefs on specific network printing solutions for several environments. These technology briefs offer information you can use to improve network printing. And best of all, they're absolutely **FREE**. To receive a copy, just call toll-free: **1-800-553-1333 extension 7440** in the U.S. or **1-800-387-3867** in Canada, and ask for any of these briefs by name:

- Maximizing Printing in the Novell NetWare Environment
- Maximizing Printing in the UNIX Environment
- Maximizing Printing in Multiple and Mixed Environments
- Maximizing Enterprise Printing in Mini/Mainframe Environments
- Maximizing Printing in the Windows, Windows for Workgroups and Windows NT Environments

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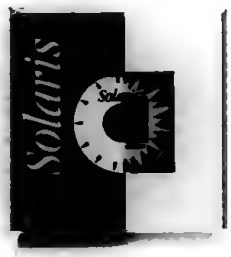

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TOCK

HELP LINE

Part of an occasional series of columns aimed at providing users with answers to technical questions. This week's questions and answers are provided by Corporate Software, Inc. in Canton, Mass.

Borland International, Inc.'s Paradox for Windows 1.0:

Q. I have made format changes to some numeric fields in a table, but those changes are not reflected in reports or forms based on that table.

A. When you create new objects with numeric fields, Paradox always formats the fields with the Windows default format. This means any changes you make to numeric fields in the table will not be reflected in reports or forms based on that table. You must select the field in the report or form and change the number format for that particular object.

IBM's OS/2 2.0:

Q. I am having problems getting OS/2 to recognize my COM3 port. Do you have any suggestions?

A. If IBM OS/2 does not recognize the COM3 port, edit your CONFIG.SYS file as follows: Add the statement (3,3E8,7) to the end of the lines that begin with COM.SYS and VCOM.SYS. The first 3 signifies the COM port (in this case COM3). The middle statement, 3E8, is the address for the port. The final number, 7, is the interrupt used by the COM port.

You can alter either the address or the interrupt as required by your system setup.

Microsoft Corp.'s Word for Windows 2.0:

Q. I've resized a graph in my Word document. When I send it to print, it prints out in its original size. Why?

A. Select Tools/Options/Print and be sure that the Update Fields option is not checked. Otherwise, when you send the document to print, it will continue to update that field and cause it to revert the graph to its original size.

Q. On my status bar, there are no numbers displayed at "At" and "Ln." What are these for, and why are they blank?

A. "At" indicates where the cursor is located in inches from the top of the page. "Ln" indicates which line the cursor is on.

If there are no measurements in these fields, there are a few things to check. The numbers will not appear if: Draft is selected under the View menu; Background Pagination is not selected under Tools/Options/General; Line Breaks and Fonts as Printed is not selected under Tools/Options/View; or there is no printer selected under File/Print/Setup.

WordPerfect Corp.'s WordPerfect 5.2 for Windows:

Q. How do I create a Dynamic Data Exchange (DDE) link from a slide in Lotus Development Corp.'s Freelance Graphics for Windows 2.0 in WordPerfect for Windows? Whenever I try to do this, the Paste Link option in WordPerfect is grayed out and I can't select it.

A. To create a DDE link from a slide in Lotus' Freelance Graphics for Windows 2.0 into WordPerfect for Windows, you must select the slide in Freelance under Page Sorter view.

In Freelance, first save the source file, and then select View/Page Sorter. Choose the slide to be linked and select Edit/Copy. In WordPerfect for Windows, select Edit/Link/Paste Link.

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Electronic distribution systems

CONTINUED FROM PAGE 37

systems that will allow us to integrate with the customer's purchasing system."

For software vendors, the most attractive element behind the changing software distribution dynamics is the fact that it is cheaper to distribute software on CD-ROMs. Also, electronic delivery systems will for the first time give vendors and information systems organizations a way to accurately count the amount of software that is actually in use.

IS directors will also benefit because they will no longer have to individually load software on each PC using floppy disks, which will serve to reduce distribution, administration and support costs (see chart page 37).

But while technologies such as Hermes represent nirvana in terms of administrating software allocation, David Coursey, editor of the "P.C. Letter" newsletter, noted that it will still be several years before this type of technology is perfected enough to make any substantial impact on IS organizations.

In addition, once the technology is in place, software vendors will be expected to take a cautious approach toward adopting it because they do not want to rile their distributors and resellers. But by combining electronic delivery systems with CD-ROM disks, many software vendors will be able to effectively cut distributors and many resellers out of the purchasing loop.

"I think that we'll see a lot more end users ordering direct because of these technologies. We'll have to see how this affects the channel," said D. Clive Winn, vice president of sales at WordPerfect Corp. in Orem, Utah.

"All of this will have to be worked out with the channels before it's widely adopted," added Robert Weiler, senior vice president at Lotus Development Corp. in Cambridge, Mass.

According to Stoffolano, Corporate Software, unlike traditional box pushers, will adapt by focusing on services that will initially help users install electronic delivery systems. After that, Corporate Software will provide the more mundane tracking, billing and monitoring services that most IS organizations prefer not to do across products from multiple vendors.

For instance

Two players are aggressively pursuing the market for electronic software distribution: InfoNow Corp. in Boulder, Colo., which provides a service that allows corporate customers to download software from an electronic store, and Frye Computer Systems, Inc. in Boston, which provides a set of utilities for distributing and updating software for Windows and DOS systems on a local-area network.

"It hasn't all gelled yet, but we're definitely heading toward electronic commerce," said John Ball, InfoNow vice president of marketing.

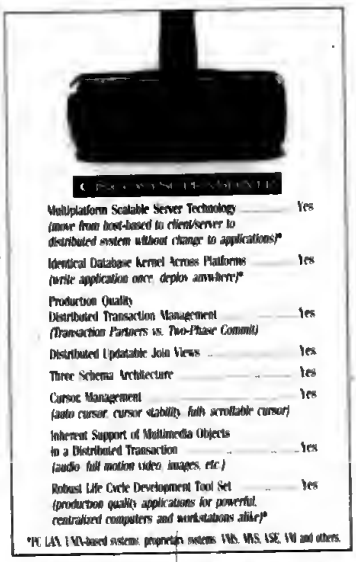
"For software, the simplest thing is not to distribute it on hard goods since its real value is as electronic bits. And when you add the fact that you can also deliver backup disks, updates and manuals electronically, you're talking about a savings of $12 to $15 per sale. That's a significant savings for software vendors," Ball said.

In the meantime, Russell Frye, president of Frye Computer Systems, said he will adapt his company's Software and Update Distribution System so it is able to recognize data from a variety of systems, including Microsoft's Hermes technology.

"Software vendors already know how to provide direct fulfillment, but they are so dependent on the channels that they are afraid to promote it," Ball added.

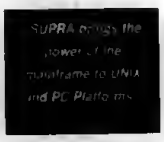
—Michael Fitzgerald

For enterprise-wide implementation of client/server systems, a powerful, fully featured database management system is an absolute must. SUPRA® SERVER, from Cincom, is a truly open, scalable database server designed from the ground up to deliver the full benefits of client/server computing across a full range of requirements. Other client/server database systems will eventually "hit the power wall" in the large scale use demanded by enterprise-wide implementations. In contrast, SUPRA SERVER has been built on 25 years of mission-critical database experience to deliver the robustness your business needs. In other words, the power is inherently available when and where you need it. SUPRA SERVER provides a common database serving PCs, UNIX workstations, Macs, VAXs, mainframes and others...all with an identical single system image.



Multiplatform Scalable Server Technology (move from host-based to client/server to distributed system without change to applications)*	Yes
Identical Database Kernel Across Platforms (write application once, deploy anywhere)*	Yes
Production Quality Distributed Transaction Management (Transaction Partners vs. Two-Phase Commit)	Yes
Distributed Updatable Join Views	Yes
Three Schema Architecture	Yes
Cursor Management (auto cursor, cursor stability, fully scrollable cursor)	Yes
Inherent Support of Multimedia Objects in a Distributed Transaction (audio, full motion video, images, etc.)	Yes
Robust Life Cycle Development Tool Set (production quality applications for powerful, centralized computers and workstations alike)*	Yes

*PC, LAN, LAN-based systems, proprietary systems, VMs, MVS, ASE, AS and others.



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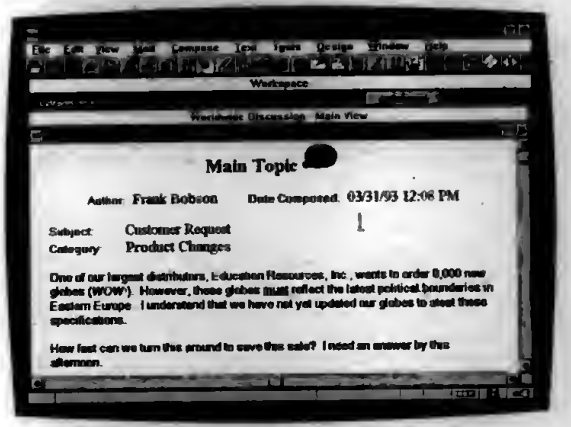
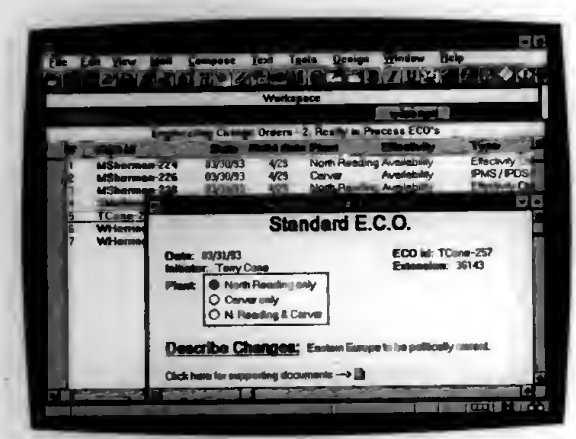
1. This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems worldwide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.



2. The field rep in Texas is working on a request from a customer. But to make the sale the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



5. Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.

6. After lunch he opens a document from Ellen in product development who has responded with the necessary changes and scheduling information. The new art was scanned directly through Lotus Notes Document Imaging from the art department. James approves the art for manufacturing.

How Lotus Notes Relea

Thousands of companies already know how Lotus Notes® helps them respond more quickly and effectively to the demands of everyday business. Now Release 3 extends that power to new dimensions.

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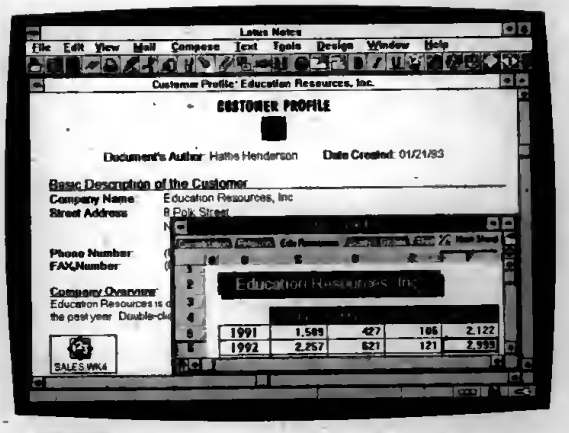
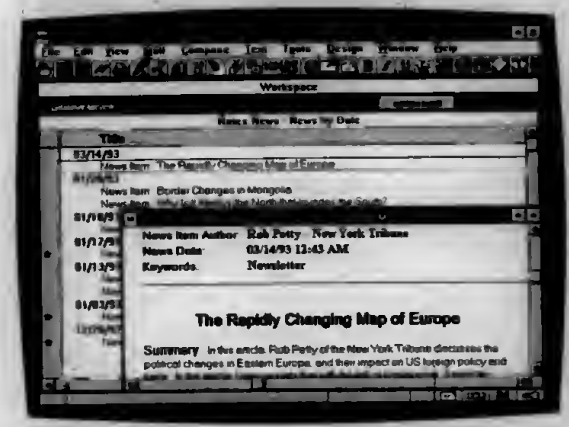
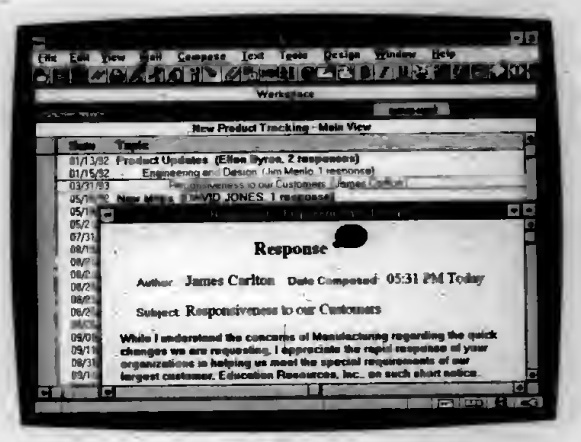
**UNIX Server and Client available by year end 1993. In Canada, call 1-800-GO-LOTUS. ©1993 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, Lotus Notes and 1-2-3 are



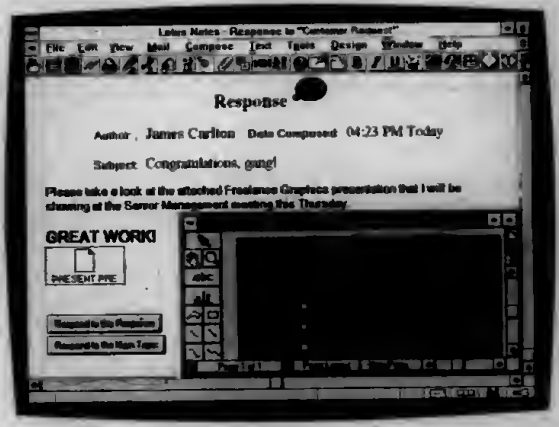
3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.



4. James' next step is to click on the Newswire database for the most up-to-date report on precisely what geographical changes will have to be made on the new globe. And just how extensive they'll be.



7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.



8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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In Brief

TI adds ink-jet printer

Texas Instruments, Inc. announced its MicroMarc ink-jet printer, the company's first foray into the ink-jet market. "We believe the ink-jet market will grow dramatically, and we want to participate in that growth," a TI official said. The MicroMarc costs $350 and has a resolution of 300 dot/in. It supports PCL 3 emulation.

Firmware agreement

Mips Technologies, Inc. in Mountain View, Calif., and **American Megatrends, Inc.** announced a joint development and distribution of firmware and Hardware Abstraction Layer (HAL) software for Microsoft Corp.'s Windows NT running on Mips R4000-, R4200- and R4400-based PCs. The firmware and HAL are elements for the Mips Open Design Center, a research center that assists manufacturers in building PCs using Mips reduced instruction set computer-based systems.

Harsh environments

A recent market research report shows that a class of computers known as "industrial PCs" has been booming. Those PCs, based on standard microcomputer technology but ruggedized for protection against the harsh environmental conditions of the factory floor, accounted for a $450 million worldwide market in 1992, according to Natick, Mass.-based market research firm **Venture Development Corp.** Venture Development also estimated that surges in that market in 1993 and 1994 will fuel further growth, bringing industry revenues to $760 million in 1997.

Dropping printer prices

Hewlett-Packard Co. last week cut the price of its HP DeskWriter C thermal ink-jet printer for Apple Computer, Inc. Macintoshes by $60 to $559, a month after shaving prices on two other members of the DeskJet family, the HP DeskJet 500 and the HP DeskWriter.

SHORT TAKES **IBM PC Co.** said it will bundle **Traveling Software, Inc.**'s Lap-Link V with its ThinkPad 720, making it the first company to bundle the new Lap-Link. . . . **Compaq Computer Corp.** was awarded a 1993-94 General Services Administration contract to sell PCs to the federal government. . . . **GE Rental/Lease**, which leases and rents PCs and workstations, has acquired **Selecterm**, a Boston-based PC rental concern, for approximately $8 million. . . . **Borland International, Inc.** and **WordPerfect Corp.** have extended their suite arrangement to include international versions of Borland Office. . . . **AST Research, Inc.** will add LocalMotion, an accelerator for Microsoft Corp.'s Video for Windows, to its Premmia desktop and server line. . . . **Spectrum Signal Processing, Inc.**, a Vancouver, B.C.-based company, announced that it has completed a prototype of a multimedia board based on the MWave digital signal processor from IBM and TI. . . . **AMR Corp.**'s American Airlines subsidiary will give its employees the option to buy **Dell Computer Corp.** PCs specially equipped to run the Sabre reservation system. AMR said it made the move to encourage employees to book travel electronically, reducing paperwork and freeing up reservation phones.

Mac users

CONTINUED FROM PAGE 37

- Offer better cross-platform support for Windows products, support binary large objects and improve connections scripting.
- Improve Apple remote access features with a remote access server. Also, increase dial-in security.
- Provide a protected memory mode in the Macintosh operating system. Include more understandable error messages.
- Develop an AppleLink database that includes known "bugs" for each version of the operating system as well as their expected resolution dates.
- Provide a more flexible licensing program by broadening distribution channels.

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® is a registered trademark and i486 and Pentium are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1993 Dell Computer Corporation. All rights reserved.

[redacted]

Utilities

Addstor, Inc. has announced DoubleTools, a product that allows MS-DOS 6.0 DoubleSpace users to enhance, view and manage their compressed disks.

Support for Bernoulli, floppies and other removable data is provided. DoubleTools has an environment-sensitive Help facility called The Advisor, plus background defragmenting disks. Users can read and write DoubleSpace compressed floppies on any DOS or non-DOS system with a Universal Data Exchange feature.

DoubleTools costs $99.95.

▶ *Addstor*
1040 Marsh Road
Menlo Park, Calif. 94025
(415) 688-0470

Espia Corp. has announced the Espia Image Exchange, a graphics utility.

The product was designed to expand the functionality of Microsoft Corp.'s Windows Object Linking and Embedding by adding seven new graphic file formats to the one used by Windows. Dithering, unlimited zooming and other functions have also been included.

Within a client application, Espia Image Exchange can display a subimage of a bigger graphic image. Users can import images in eight formats.

The retail price of Espia Image Exchange is $119; however, the product is also available directly from Espia for $80.

▶ *Espia*
Suite 204
23545 Crenshaw Blvd.
Torrance, Calif. 90505
(310) 517-8277

Peripherals

Lexmark International, Inc. has announced the IBM LaserPrinter 4039, a family of intelligent high-resolution printers.

With five models, the IBM LaserPrinter 4039 family has print speeds of 10, 12 and 16 page/min. and offers advanced networking capabilities.

The printers offer built-in PostScript and PCL5 compatibility and provide 600 dot/in. resolution with standard Print Quality Enhancement Technology.

Flash memory technology allows commonly used forms, logos and custom fonts to be stored in optional flash memory for speedier printing.

Prices range from $1,599 to $3,399.

▶ *Lexmark International*
740 New Circle Road
Lexington, Ky. 40511
(606) 232-2000

Micropolis Corp. has introduced Model 2108, a fast Small Computer Systems Interface (SCSI)-2 drive.

The product features 698M bytes of formatted data storage capacity and data transfer rates of up to 10M byte/sec.

A patented "observer-based" digital servo technology provides an average seek time of 10 milliseconds.

Model 2108 also has a rotational speed of 5400 rpm and a microprocessor that conforms to common command set and SCSI-2 definition.

Model 2108 costs $1,955.

▶ *Micropolis*
21211 Nordhoff St.
Chatsworth, Calif. 91311
(818) 709-3300

Training

Integrated Applications, Inc. has introduced an enhanced version of its Integrated Applications Digital-Audio Trainer (Iadat), an interactive computer training tool designed to improve productivity in the workplace.

The product consists of an audiocassette-based training device that uses sight, sound and touch to enable more effective learning, according to the vendor.

Iadat enables users to listen and watch instructions or training programs on a computer. It simultaneously records screen action, verbal comments, questions and every keystroke the user makes.

Iadat is compatible with most MS-DOS PCs and any asynchronous RS-232 terminal.

Iadat costs $2,595.

▶ *Integrated Applications*
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When it RAIDs, it pours

Widespread benefits, falling prices aiding technology's acceptance

By Kim S. Nash

Let's start with the basics. Redundant arrays of inexpensive disks (RAID) storage devices lash together several ordinary drives to work as one coherent unit. The process is controlled via software or a combination of software and hardware. RAID devices can be cost-effective — and prices are coming down gradually — but they are not cheap.

Among the benefits of RAID are the following:

- Faster data access time.
- Increased data availability by making storage more fault tolerant.
- Ability to add more users to existing networks without unnecessarily degrading speed.
- Protection from losing information during drive failures because the date is duplicated and/or tracked and can be reconstructed on the fly.

But like boutonnieres and patent leather shoes, RAID is appropriate in some instances, excessive in others. RAID systems can certainly work magic in networked, minicomputer or mainframe configurations, analysts said. And that is where the devices are most often used, according to James Porter, analyst at Disk/Trend, Inc. in Mountain View, Calif.

However, potential users must match their applications to specific RAID levels. RAID subsystems are best suited for two general situations: applications that demand high data throughput or those that require high data availability.

"Usually, we're talking about scenarios involving mission-critical systems," Porter said, "whether or not that's in a large company." In other words, a small human resources ur word processing application is nut a likely target fur RAID. A better candidate is a local-area network with mure than 50 or t00 PC users running key applications off a fault-tolerant server. Such a scenario calls for RAID-5 systems, Porter said.

Meanwhile, smaller setups running imaging applications should consider RAID-3 devices, which can be optimized for a high data-transfer rate. That way, individual users are not held up while colleagues send or receive data-dense images.

If total data storage capacity warrants less than four disk drives, RAID-1 disk mirroring configurations are probably the most cost-effective.

RAID at a glance

RAID LEVELS

RAID-0: Disk striping
RAID-1: Disk mirroring
RAID-2: Complex error correction
RAID-3: Parallel transfer, parity drive
RAID-4: Independent transfer, parity drive
RAID-5: Independent transfer, no parity

Most common levels are RAID 1,3,5

Stand-alone

Although RAID is currently found most often in networks uf PCs or Uuix machines, some single-user applications can see benefits using RAID. For example, users of some large, custumized graphics applications, frequently those running on Apple Computer, Inc. Macintoshes, may deem their data so critical that they want the fault tolerance and greater data integrity that RAID can provide.

"At a recent Mac show, I counted no less than eight vendurs selling RAID for Macs," Porter said. "That's grown quite a bit in the last year."

The RAID business racked up $1.5 billion in sales worldwide in t992 and is expected to top $2.8 billion this year, according to Porter. But the dynamics of the market will start tu shift, he said, as more third-party providers put unt more stable, less expensive arrays than systems makers such as IBM, Digital Equipment Corp. and Hewlett-Packard Co. By 1996, the share of disk array sales held by hardware makers will shrink from last year's 60% to less than half the total, Porter explained.

The Top 3 RAID vendors for 1992 were EMC Corp. with $314.9 million, IBM with $209 million and DEC with $204.9 million in sales.

Speaking uf money, users have to watch their pocketbooks when they choose RAID. Plain and simple, RAID subsystems uften cost more per megabyte for storage than individual disk drives, the experts agreed. That means that justifying RAID is a technical — not a cost-saving — issue, at least fur now.

The good news on the money question is that disk drive prices — and eventually RAID prices — are likely to come down during the next several years, according to David Vellante, senior vice president and storage analyst at International Data Corp. in Framingham, Mass.

While the per-megabyte price for mainframe drives, for example, runs about $5.20, the cost will sink to approximately $1/megabyte within four years, Vellante said. In fact, minicomputer- and PC-level disk drives, which currently sell for about $3.50/megabyte and $3/megabyte, respectively, are also expected to drop to $1/megabyte by 1997, he said.

However, Vellante disagreed with Porter's RAID market growth predictions. Declining disk drive prices will keep simple disk mirroring, or RAID-1, attractive, perhaps delaying the acceptance of RAID-3 or RAID-5 products, Vellante said.

Nonetheless, the market is growing and will continue to do so as client/server computing sprouts at more and more user companies, analysts agreed. As PC use expands — and the operating systems running on them grow — so will the need for data storage, they said.

NT by another name

One impetus for installing high-capacity RAID storage systems is the arrival of memory-sapping Windows NT from Microsoft Corp., said Bob Katzive, an analyst at Disk/Trend. "As everyone knows, NT stands for 'needs a terabyte,'" Katzive joked at a recent RAID Advisory Board meeting.

RAIDs for all

Here is a sampling of third-party vendors offering RAID systems for different platforms:

PCs, networks:
- Pacific Micro Data, Inc., Tustin, Calif.
- Chantal Systems, San Diego.
- Storage Dimensions, Milpitas, Calif.
- Micropolis Corp., Chatsworth, Calif.

Macintosh:
- Mega Drive Systems, Inc., Beverly Hills, Calif.
- FWB, Inc., San Francisco.

Unix systems:
- Cambex Corp., Waltham, Mass.
- Data General Corp. in Westborn, Mass., offers RAID devices for various vendors' Unix boxes. Hitachi Data Systems Corp. plans to get into the business later this year, a source said.

Superservers:
- RAID is primarily available from superserver companies such as Tricord Systems, Inc. in Plymouth, Minn., and Netframe Systems, Inc. in Milpitas, Calif.

Minicomputers:
- IPL Systems, Inc., Waltham, Mass.
- EMC, Hopkinton, Mass.
- XL/Datacomp, Inc., Hinsdale, Ill.
- Storage Computer Corp., Nashua, N.H.
- ECCS, Inc., Tinton Falls, N.J.

Mainframes:
- EMC is currently shipping a mainframe-level RAID device. Meanwhile, Storage Technology Corp. in Louisville, Colo., and IBM have promised but not delivered similar systems.

Driving for more

Industrial Towel and Uniform, Inc. plans to add a RAID system from Tricord Systems, Inc. to two Tricord PowerFrame Model 40 superservers for 4.8G bytes of data this month. The New Berlin, Wis.-based company decided to go the RAID route because "ordinary storage configurations just wouldn't do justice to that much data," said Steve Knauf, chief information officer, referring to Industrial Towel's need to have nearly the entire 4.8G bytes of information available almost constantly.

The data in question primarily pertains to order processing and tracking. "If we lose a spec of it, we can lose track of what [business] we're doing," Knauf said.

RAID devices come in many shapes and sizes, as Cliff Fischer, technical support manager at Denver's CoBank NA, will tell you.

Fischer said he was surprised when a FailSafe array from Micro Technology, Inc. arrived in five big boxes containing various pieces of the RAID device. Once assembled, the 24G-byte array was so big that Fischer had to remove the hinges and door from his computer room's standard-size doorway. However, the vendor provided one nicety: Stapled to the side of the largest box was a preauthorized shipping order for the return of all the packaging for recycling.

Six months ago, Fender Musical Instruments Corp. installed Alpine Storage Manager, a RAID-5 system from XL/Datacomp, Inc. in Hinsdale, Ill. Besides the company's Scottsdale, Ariz., headquarters, Fender uses RAID at five manufacturing and distribution plants in the U.S.

One of the biggest jobs the Alpine system does is manage data generated by "several million" transactions zipping through a large bar-coding system, according to Ed Taylor, director of MIS. The system tracks guitar sales from inventory stocking to customer delivery. — *Kim S. Nash*

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PC Week - May 10, 1993

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Jean S. Bozman

In users' hands

When it comes to client/server user interfaces, the customer is always right.

Client/server technology should mean that people get to pick their favorite user interface and to use that PC or workstation to get at whatever data they wish — no matter where it is stored in an enterprise network.

That just happens to be the vision of IBM's Thomas Furey Jr., head of that company's newly minted client/server business unit. In March, Furey told attendees at an IBM briefing in Orlando, Fla., that his own study of the client/server universe convinced him that "religious" preferences for one type of PC or workstation or another no longer matter.

Noting that this was his personal opinion — and not necessarily that of IBM — Furey said PCs demand personal choices. "When you're dealing with the personal computer, people tend to break down into religious factions on the subject," he said. "I mean, people who are addicted to Macintoshes wouldn't take anything different, and people who like Windows wouldn't take anything different. Of course, people who like OS/2 or Unix-based systems are very much tied to their system of choice."

Unix workstation users may be tied to their system, but now they, too, have the option to run non-Unix applications on their workstation screen. In early May, a new flurry of interface options broadened users' choices about which computer application sits on their desktop.

Unix users, whether they are engineers or financial traders, can now elect to run Windows or Macintosh applications on their Sun workstations. That much can be done either by using Sun's Windows Application Binary Interface (WABI); by using a Sun/Macintosh interface; or by using Microsoft's solution: running emulation software from Insignia Solutions on Unix machines.

Better solutions

Before the new Windows interfaces appeared, Sun users who had turned to emulation software reported that emulation slowed performance and drained memory. Others relied on application developers to recompile Windows programs for use on Unix machines, but those programs sometimes cost more than $1,200 — three or four times the price of standard Windows software.

How well will the Unix/Windows solution work? Sun said it will certify WABI applications in waves, making sure popular spreadsheets and word processing packages work just as well on Unix workstations as they do on desktop PCs. That will take months of testing, at the very least. The first wave of Windows applications approved for use with WABI numbered about 15 packages.

Now, if the news from the certification front is good, Unix users will be able to go to the corner PC software store and buy any Windows application they want. The result might be that at least some PCs, which formerly shared desks with Unix workstations, will be moved to other people's desktops. That is what happened to side-by-side PCs and terminals after Microsoft Windows came along. One of them, usually the terminal, found a new home, perhaps in a dumpster.

What if the news is not good, and the combination of Unix systems and Windows or Macintosh applications proves cumbersome or unreliable? Then, Unix users will have new hardware options, as well. They will soon be able to run Unix applications on Intel 486 and Pentium desktops. That is happening with The Santa Cruz Operation's SCO Unix, and it will occur even more as SunSoft Solaris software and Next's NextStep software are deployed on Intel hardware.

Choices, choices

With such options, what exactly will define a user's desktop choice?

It may not be the interface, which can be transferred from owner to owner. It may not be the hardware because the same application will be able to run on powerful RISC or Pentium hardware platforms. It may not even be the operating system, as 32-bit applications are ported to run under Unix or Microsoft's Windows NT.

It may just be that, finally, the user has a say in what hardware and software will make him or her most productive.

"The base of power, where data is being collected and owned, is shifting to end users," Furey said, adding that the world's hierarchical organization charts are inexorably getting flattened.

So, instead of having standards committees make the final desktop decisions, IS managers may have to finally ask end users: "What computer would you like to have on your desk?" and then IS can figure out how to tie it all together.

Bozman is *Computerworld*'s West Coast senior editor.

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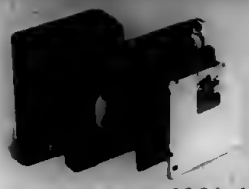

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Reliability

Health agency cures diseased data center

Misuse by users cited for failure of calendaring program, data corruption

By Michael Fitzgerald
ATLANTA

"The best-laid plans of mice and men go oft astray."

The Centers for Disease Control and Prevention (CDC) ran afoul of Robert Burns' 17th-century warning when it implemented an organizationwide calendaring program earlier this year.

The agency spent more than six months evaluating network-capable calendaring programs before it settled on CaLANdar, a network calendaring system from Microsystems Software, Inc. in Framingham, Mass. While end users were not forced to use calendaring, the CDC did mandate that anyone who did want it had to use the new standard, and all nonstandard packages were removed. Still, data integrity problems popped up.

Louis Kahn, chief of computer and network operations for the CDC's national immunization program, said Microsystems Software and the CDC shared the blame on this one.

"The bottom line is, during the evaluation process people bought packages, and if someone bought a copy of the standard package before we implemented it, we let them keep it," Kahn said. "We then found that when we synchronized the calendaring program around the WAN, it corrupted everyone's database."

No data was lost as a result of the corruption.

What's in a name?

Kahn said the data corruption occurred because some users who had already installed CaLANdar did not follow naming conventions or were using their network identifier as a calendaring log-on.

The CDC fixed the problems over the weekend of May 22, cutting the bad links, fixing the data and cleaning out bad data. The system now runs fine.

Kahn said the CDC initially decided to standardize on a calendaring program when a number of managers began using the packages for their calendar, address book and scheduling features.

"If we were going to have calendaring, [management] wanted a way to do it across the centers, and to do that we needed a uniform calendaring system CDC-wide," Kahn said.

Now more than half of the CDC's 10,000 employees use CaLANdar, which will schedule meetings and synchronize them across the network. It runs over Microsoft Corp.'s Mail package.

Kahn said the CDC is also testing a way to synchronize data from Sharp Corp. Wizards, which it may give to top managers to improve their efficiency in scheduling meetings.

Emerald releases LAN backup equipment for NetWare

By Michele Dostert

Emerald Systems Corp., the San Diego-based network backup vendor, has introduced an inexpensive hardware/software backup solution for local-area networks running Novell, Inc.'s NetWare 2.X and 3.X operating systems.

The hardware/software bundles, called XpressTape for NetWare, include both workstation-based and file server-based NetWare Loadable Module configurations, with peak data transfer rates of 18M byte/min.

XPressTape drives have a Small Computer Systems Interface for faster backup and higher reliability, as well as support of Quick File Access for fast retrieval. Both full and incremental backup sessions can run unattended, and the software can handle open files. XpressTape can facilitate disk grooming by archiving dormant files to tape and deleting them from the file server.

The package comes in two capacities: 525M bytes, starting at $1,195, and 2G bytes, starting at $1,495. Adaptec, Inc. controllers are sold separately.

Emerald is also planning to release, within a few weeks, XpressTape support for Artisoft, Inc.'s LANtastic; Tiara, Inc.'s 10Net; and Novell's NetWare Lite peer-to-peer network operating system.

"We have designed XPressTape as a cost-effective, warrantied, high-capacity, DOS-based solution for networks needing up to 2G bytes of storage," said Andrew Eccles, Emerald Systems' director of product marketing.

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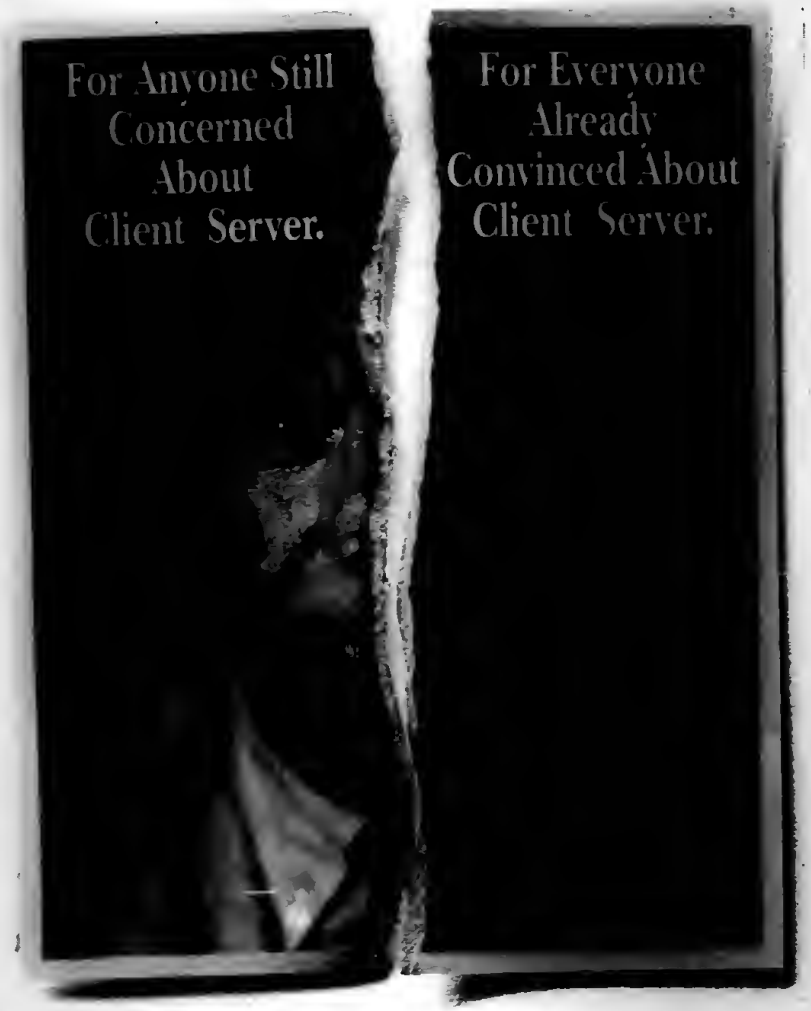

Although distributed computing gives users greater data access, PowerBuilder *lets IS keep control of the client/server environment.* Features like shared object libraries for team development and standard and custom objects ensure that applications throughout your organization look the same, run the same, and meet your standards for quality.

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Fax integration theme of software, server products

Combo will increase options for LAN/fax harmony

By Lynda Radosevich

By the end of this summer, users will have more options for integrating the plebeian fax with their local-area networks, thereby reducing paper flow and adding electronic organization capabilities to the fax processing.

At Spring/Comdex '93, Toronto-based Delrina Corp. announced a network version of WinFax Pro fax software. The software, which is scheduled to ship in the third quarter, lets users on a network share one or more standard fax modems, and it does not require a dedicated fax server.

Randall Meston, a senior engineer at KVOA-TV in Tucson, Ariz., uses the PC version of WinFax Pro and envisions using the network version to help organize the roughly 100 faxes per day that come into the TV station's newsroom.

"We want to computerize and centralize the tracking and routing of faxes so that people don't have to wonder, 'Who lost that sheet of paper?' " Meston said.

The fax software works with Novell, Inc.'s NetWare and NetWare Lite, Artisoft, Inc.'s LANtastic and Microsoft Corp.'s Windows for Workgroups. It can also work with messaging application programming interfaces (API) such as Vendor Independent Messaging, Microsoft's Messaging Application Programming interface and Novell's Message Handling Service.

The API support allows users to integrate faxes with other Windows applications. For example, an incoming fax message can be attached to a work-flow form and routed through an organization, Delrina said.

WinFax Pro for Networks starts at $399 for two client licenses. One server license supports four fax/modems.

LAN fax server introduced

Also at Comdex, Futurus Corp. in Atlanta demonstrated a LAN fax server for its Team electronic-mail software for DOS and Windows PCs. Shipping now, the fax server is somewhat limited to use with Futurus Team, a Futurus spokesperson said. However, for Team users, the server allows fax viewing and sending from the desktop and the ability to send faxes from within Windows applications.

Pricing for Futurus Team Fax starts at $795 for a 25-user pack.

Fax resource accessing

WordPerfect Corp. said WordPerfect 6.0 for DOS word processing software, scheduled to ship June 28, will work with a fax specification that lets users access network fax resources from within WordPerfect. The specification is called FaxBIOS and is supported by $995 fax server software from Optus Software, Inc. in Somerset, N.J.

In addition, Microsoft will demonstrate in New York this week its vision of an integrated office based on the Windows operating system. A main component of the Microsoft office architecture is coordinating fax services with Windows. To that end, Ricoh Corp. in West Caldwell, N.J., plans to unveil this week a new fax machine designed to run over networks of Windows-based machines.

In Brief

Sun, Fujitsu partner

Sun Microsystems Computer Corp. said recently that it will jointly develop its next generation of MicroSPARC reduced instruction set computing chips with Fujitsu Microelectronics, Inc. in San Jose, Calif. Fujitsu Ltd. has been associated with Sun Scalable Processor Architecture (SPARC) chips since 1985. The MicroSPARC II, which is based on .5 micron CMOS technology, will be used in desktop computers, portables and servers that run SunSoft's Solaris 2.X operating system. Samples of the new chips are scheduled to be released to vendors later this year, according to Sun.

HP licenses infrared

Hewlett-Packard Co. has lined up a number of licensees for its serial infrared technology [CW, May 10]. Sun Microsystems, Inc., Intel Corp., Traveling Software, Inc., EO, Inc., Extended Systems, Inc. and the Portable Computer Communications Association have either licensed the technology or announced support for HP's efforts. Sources said NCR Corp., Zenith Data Systems and Tandy Corp. are expected to sign on as well. HP has scheduled an infrared standards committee meeting for June 28.

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[redacted]

Unix

Information Foundation has announced a new packaging and pricing strategy for its Unix System V, Release 4.2 products designed for Intel Corp.'s platforms.

The Enhanced Unix Desktop is Information Foundation's entry-level Unix offering and comprises the X Window System, a complete Unix runtime environment, graphical system administration tools, the graphical Unix Desktop Manager, the Windowing Korn Shell, a full implementation of Transmission Control Protocol/Internet Protocol, a full set of advanced Unix utilities and on-line Unix manual pages.

The license-only version of the Enhanced Unix Desktop costs $249. The tape version costs $299, and the disk version costs $399.

▶ *Information Foundation*
Suite 1900
1200 17th St.
Denver, Colo. 80045
(303) 572-6486

Workgroup software applications

Computervision Corp. has announced Personal Designer, Revision 6.0.

The product is part of the company's three-dimensional computer-aided design (CAD) software family. The revision comprises Personal Designer software that was created for mechanical design, a user programming language, a 2-D version of Personal Designer called MicroDraft, Personal Designer Data Extract and the Personal Designer/CADDS Direct Translator for interoperability between Personal Designer software and the company's CADDS workstation software.

A Personal IGES translator interchanges files with other computer-aided manufacturing and CAD systems with the Initial Graphics Exchange Specification (IGES) data exchange format.

Data can be exchanged within any system that can read and write in the Drawing Interface File Format with the Personal DXF translator.

Personal Designer costs $3,995.

▶ *Computervision*
100 Crosby Drive
Bedford, Mass. 01730
(617) 275-1800

Epoch Systems, Inc. has announced EpochBackup, client/server enterprise backup and recovery software.

According to the company, the product offers a high-performance architecture that ranges from small to extremely large networks and adjusts to expanding enterprise configurations. EpochBackup automatically backs up and restores files that are on heterogeneous servers and workstations. The product is available on Sun Microsystems, Inc.'s Solaris 2.2 operating system and Sun Microsystems Computer Corp.'s SPARCserver 1000 system and SPARCcenter 2000.

Prices start at $2,200.

▶ *Epoch Systems*
8 Technology Drive
Westboro, Mass. 01581
(508) 836-4300

Clarify, Inc. has announced ClearSupport 2.0, a technical support management system, and ClearQuality 2.0, a defect tracking system.

The products are part of Clarify's customer service management system and offer a range of reports and other methods for extracting data from the database, the company reported. ClearSupport 2.0 provides enhancements such as parts and serial number management that enable users to follow an individual product through its life cycle, the company said. A variety of ease-of-use and administrative improvements and printing capabilities have been added. ClearQuality 2.0 has features that identify duplicate defects. Source-code control interfaces and numerous printing and reporting enhancements are included.

A typical ClearSupport configuration is priced at $6,000. ClearQuality is priced at approximately $4,000.

▶ *Clarify*
2702 Orchard Pkwy.
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(408) 428-2000

Storage

Tapedisk Corp. has announced Tapedisk, a software device driver.

According to the company, the product enables chosen digital audio tape and QIC-1000 tape drives to emulate hard disks, complete with a DOS-assigned drive letter designation.

Gigabytes of data can be accessed by users who can read, write and revise archive files that house hundreds of megabytes of data.

Tapedisk provides a variety of applications such as identifying and automatically storing only updated files, the ability for a single command to make an exact copy of all locally connected hard disks onto a Tapedisk cartridge and the ability to eliminate the need to download files to the hard disk from the tape. The product runs under MS-DOS 5.0 or higher, Microsoft Corp.'s Windows 3.1 and Windows for Workgroups.

Tapedisk costs $199.95.

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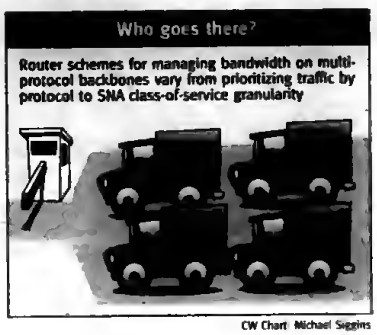
Users turn to routers for managing bandwidth

By Joanie M. Wexler

Companies scaling up their local-area network applications to run enterprisewide are faced with having to maintain the consistent response times LAN users have come to expect, which can be hamstrung by relatively sluggish wide-area links.

To police greedy LAN protocols, which were originally designed to run solo and will hog as much of the limited wide-area network bandwidth as they can get, many firms are allying with their multiprotocol router vendors against clogged wide-area arteries.



CW Chart: Michael Siggins

Router cops

Increasingly, routers — the cornerstones of LAN internetworks — are gaining filtering, compression and traffic prioritization algorithms designed to help users maximize their WAN circuit use. The prioritization schemes, which vary in sophistication and granularity from vendor to vendor (see box page 63), help ensure that no single traffic type on a multiprotocol backbone gets "starved" for bandwidth.

"The challenge is trying to run complex networks over low-speed lines," explained Kevin Tolly, president of Interlab, an equipment test lab and consulting firm in Sea Girt, N.J. "NetBIOS-based applications such as NetWare, Lotus' Notes and CC:Mail were not designed for low-bandwidth environments. Some people scaling up are starting to get burned."

"Everybody's first tack should be eliminating unnecessary traffic on WAN links [through filtering]," advised Jim Tretter, telecommunications manager at Multifoods in Minneapolis, a Wellfleet Communications, Inc. router shop. "Then, we need a mechanism to prioritize traffic effectively."

Multifoods is running an older Wellfleet platform that supports no traffic prioritization; however, this month the vendor will bring its older platforms in line with its newer Backbone Node line of routers, Wellfleet said.

This means the older line will support the same basic level of prioritization as the Backbone Node, called "protocol queuing." This scheme lets users specify traffic types to be dumped into various "bins" designated for high-, medium- or low-priority transmission. When the high-priority bin is empty, the router takes traffic from the next-level bin and so on.

Time-sensitive traffic, such as terminal-to-host protocols, usually has a higher rank than file transfers, as response time delays are more noticeable, and sessions can actually time out. Customers of vendors supporting the "bin" method can usually specify some number of packets or length of time after which the router will leave data still sitting in a higher priority bin and move on to the next, so that no traffic type is constantly neglected.

"What we'd really like is priority within a protocol — that's what people are used to with SNA," Tretter said.

Routers, *page 63*

Flexible fare

In addition to traffic prioritization, data compression and packet filtering, vendors differ with WAN-oriented routing algorithms are helping users manage bandwidth. Router-to-router communications algorithms such as Open Shortest Path First, Novell, Inc.'s NetWare Link State Protocol and 3Com's Advanced Peer-to-Peer Networking routing algorithm tailor paths to update other routers in a WAN only when something in the network changes, not on a preset basis. This reduces unnecessary communications overhead.

Multiplexers

NET takes T1 one better

By Joanie M. Wexler
REDWOOD CITY, CALIF.

■ Innovation graced the T1 multiplexer market recently when Network Equipment Technologies, Inc. (NET) introduced a device that brings to private networks the on-the-fly bandwidth allocation efficiencies found in public-switched Integrated Services Digital Network (ISDN).

NET's ISDNX Server Module, which conforms to National ISDN-1 Primary Rate (1.5M bit/sec.) standards, turns NET Integrated Digital Network Exchange (IDNX) backbones into flexible masses of bandwidth that can expand or contract in sync with shifting application requirements.

By contrast, in typical T1 networks today, users dedicate each of the 24 64K bit/sec. circuits that make up a 1.5M bit/sec. T1 to a particular application; those circuit allocations remain fixed until the user changes them or until a preset time, whether or not they are carrying traffic.

During the first half of next year, NET will add inverse multiplexing to allow the IDNX to play the dual role of private switch and public network access device, said Bob Schiff, NET's director of IDNX product marketing. The combined capabilities will represent NET's coogestion overflow control scheme: The IDNX will decide on the fly whether a given application should run over the private backbone or the public Primary Rate ISDN network.

Some IDNX shops are intrigued by these capabilities because of growing corporate interest in full-motioo video communications — an application ripe for ISDN because it requires a wide chunk of bandwidth when it is being used but runs sporadically enough that osers do not want to nail up network resources for it.

NET, *page 62*

McData captures SNA

By Elisabeth Horwitt
BROOMFIELD, COLO.

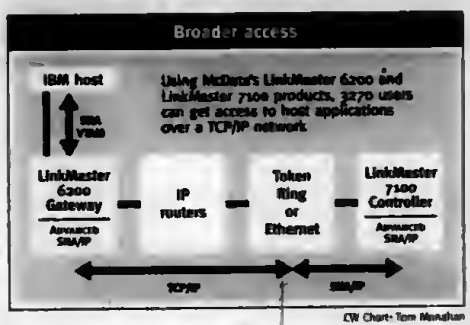
McData Corp. recently added fodder to the industry debate over what type of communications box is most suitable for putting IBM Systems Network Architecture (SNA) over the corporate internetworking backbone.

McData announced Advanced SNA/IP, a protocol that is said to allow any SNA cluster controller or gateway to encapsulate SNA packets into Transmission Control Protocol/Internet Protocol (TCP/IP) and send them to any router.

The vendor said it will make those specifications generally available for free in the hopes of generating an industry standard. SNA controllers, such as McData's LinkMaster family, connect SNA hosts, terminals and cluster controllers to local-area networks and router backbones.

If the SNA controller takes responsibility for putting TCP/IP headers on an SNA packet, routers can then handle SNA traffic as if it were straight TCP/IP, without tying up their CPU with SNA routing chores, a McData spokesman said.

Cisco Systems, Inc., meanwhile, is working on a host channel connection for its high-end 7000 router, which would eliminate the need for an SNA controller such as McData's to handle traffic to the host, a Cisco spokesman said. Cisco denied the need to offload SNA processing from its routers.



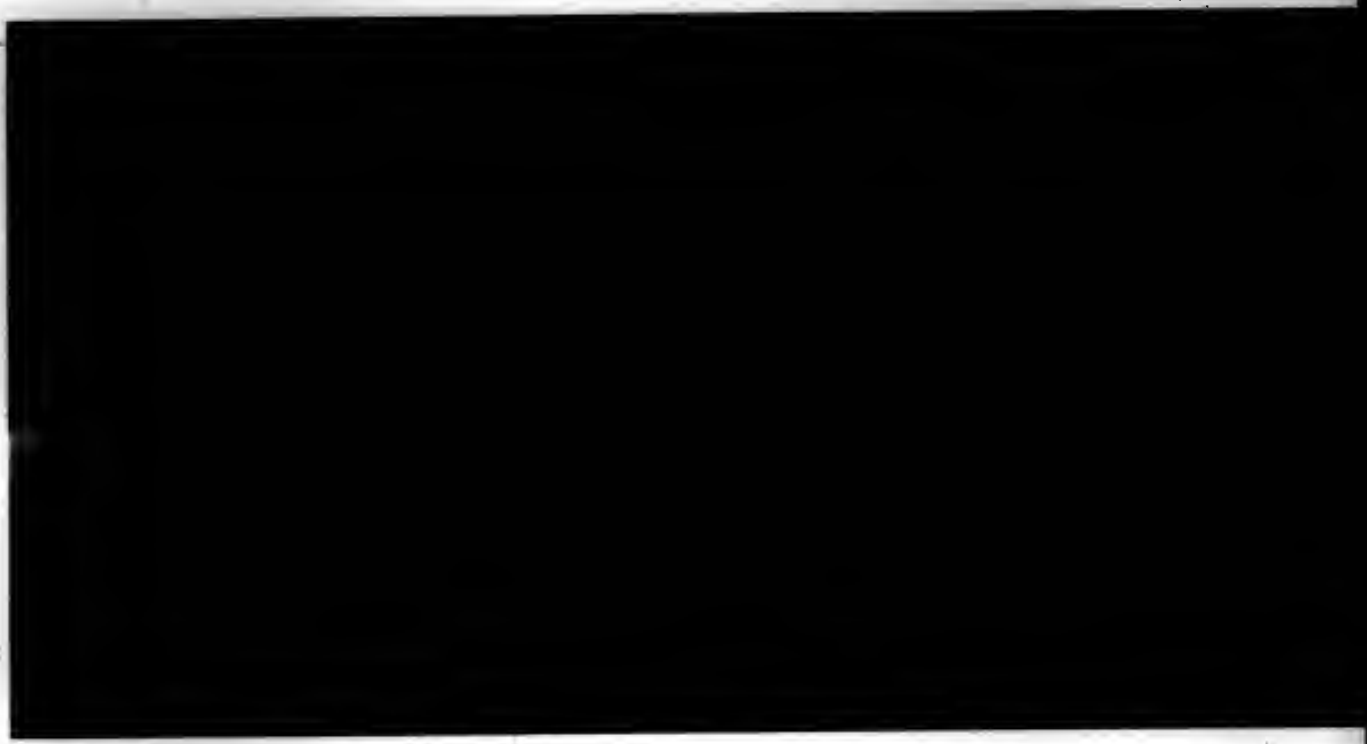
CW Chart: Tom Monahan

But some users felt differently. Howard University, for example, is in the process of connecting 60 buildings over a Fiber Distributed Data Interface (FDDI) backbone consisting of Cisco AGS Plus routers running TCP/IP. The routers will not need to handle SNA traffic because McData controllers will already have encapsulated the SNA within IP packets, said Lorenzo Washington, assistant director of telecommunications.

The university had already installed McData's 6200 channel-attached controllers as front ends to handle traffic to IBM mainframes at the university's data center. McData 7100 controllers were being used to put 3270 devices onto Ethernet LANs. Now the 7100s will be used to give those 3270 devices a TCP/IP-based connection to the FDDI backbone, Washington said. "I'd like my 3270 users to be able to use the same cable plant, concentrators and fiber-optic backbone" as PCs running TCP/IP, he said.

McData said its LinkMaster 6200 SNA communications processors will support Cisco's Remote Source Route Bridging protocol for encapsulating SNA into TCP/IP packets. In addition, McData said it plans to support a future industry standard based on IBM's Data Link Switching protocol.

Is there anything your mainfra



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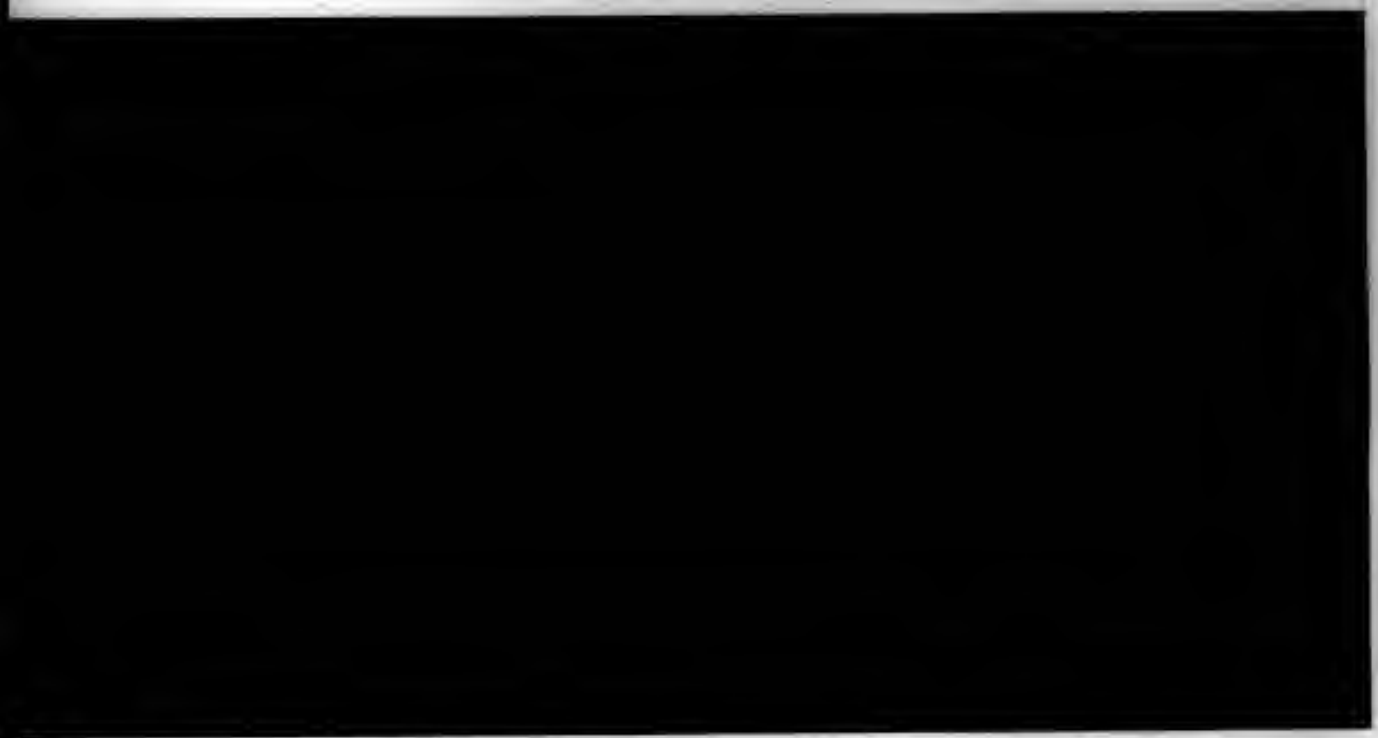

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HP bulks up net manager

OpenView for Windows readied for end users

By Elisabeth Horwitt

Hewlett-Packard Co. is grooming its OpenView for Windows, a runaway success in the network management OEM market, as an application-rich, end-user network management platform.

Like its big brother OpenView for Unix, the Microsoft Corp. Windows-based product uses Simple Network Management Protocol (SNMP) for managing networks and networked systems.

The Windows platform, which is much more widely installed than the Unix version, has primarily been an OEM product that network and systems vendors use to build network management systems.

Recent and upcoming HP announcements aim to position the product as a low-end platform that would be sold by value-added resellers, HP said. OpenView for Unix is sold directly to users.

OpenView for Windows could manage a particular type of network system or site, while the Unix-based OpenView manages the enterprise, the spokesman said. It is offering some of the same functionality and graphical look and feel as the Unix version.

In addition, HP is expanding third-party network management application support for its Windows product and plans early next year to introduce an application of its own for the platform. Workgroup Node Manager will enable OpenView for Windows nodes to actively monitor and manage SNMP-based devices, along the lines of the Network Node Manager HP offers for the Unix version.

An SNMP Management Information Base compiler will allow the Windows platform to interact with management functions that are specific to a given network device.

The newly released OpenView for Windows Version 7.0 incorporates an enhanced graphical user interface with a status and tool bar for quick access to frequently used commands and simultaneous displays of multiple network submaps. A new alarm manager performs alarm filtering, sorting and history reporting. In addition, the platform's SNMP services have been enhanced to support Novell, Inc. IPX networks.

Version 7.1, scheduled for release in August, will be able to automatically discover all Transmission Control Protocol/Internet Protocol and IPX devices on a network and lay them out hierarchically on a network map. The SNMP Manager will allow users to develop management applications that browse, poll and graph the statistics and data collected from SNMP-compatible network devices.

In addition, Remedy Corp. announced that its Action Request System, which tracks problems, will run on OpenView for Windows, as it now does on the Unix version.

A runtime license for OpenView for Windows 7.0 and 7.1 is $595.

NET takes T1

CONTINUED FROM PAGE 59

"What we might very well use this for is as an 'extension cord' to a carrier's ISDN service, which we are looking to for on-demand videoconferencing," said David McConnell, advisory telecommunications consultant at McDermott, Inc., a New Orleans-based IDNX shop.

The ISDN-over-T1 would fill in the gaps in locations where ISDN service is not available, McConnell explained.

Video on demand

Pacific Gas & Electric Co. is also interested in someday leveraging its IDNXs for efficient videoconferencing. "We want to schedule video sessions on demand, not make them permanent calls," said Jennifer Soon, IDNX manager at the utility.

NET estimates that users should realize 25% to 30% savings in hardware and transmission costs, largely because of increased bandwidth efficiencies.

For example, at the U.S. Air Force, which has been testing the ISDNX and inverse multiplexing modules, "we have offloaded video and fax call setup from a network administrator to the end users," said Lt. Col. Bill Thomas, director of the Air Force's Washington, D.C.-based information technology group. The Air Force runs a nationwide NET backbone.

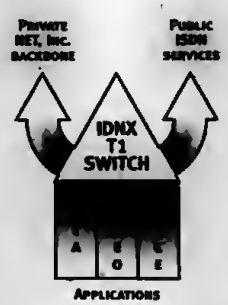
"We've gained better bandwidth utilization by letting users set up calls when they need them, rather than having an operator plan out end-to-end connections," Thomas explained.

The ISDNX will be generally available across the IDNX line next month in North America.

The $10,000 module supports up to seven Primary Rate Interfaces; users must also buy T1 interfaces for the module, which cost $4,750 for two T1 ports, Schiff said.

Mux goes AC/DC

Outfitted with ISDN and inverse multiplexing modules, NET's T1 switch can direct traffic over a public switched or private network



CW Chart: Tom Monahan

Routers aid bandwidth management

CONTINUED FROM PAGE 59

Some devices will rank services within Internet Protocol (IP) or by IBM Systems Network Architecture's (SNA) inherent class of service characteristics. IBM's 6611 Network Processor supports SNA class of service but so far has no mechanisms for ranking other protocols, the company said.

SNA prioritization

Meanwhile, router market leader Cisco Systems, Inc. supports three SNA prioritization levels in addition to protocol queuing, LAN-by-LAN prioritization and priority based on packet size, according to the company. Cisco said SNA users can rank traffic on a service-by-service basis, by which cluster controller the user is attached to or by an individual resource on a given controller.

However, "administering the router on an individual-resource basis sounds nightmarish," said Jon Castle, an engineer at Cisco shop Commonwealth Edison in Chicago. "We'll eventually squeeze IBM protocols through our routers, so we'll need the SNA schemes. But I can't see doing it down to the individual level."

Cisco shop Convex Computer Corp. in Richardson, Texas, uses Cisco prioritization in the IP world to "overcome serialization delay" when X Window System and character-based IP terminal traffic collides with Convex's multimegabyte-size file transfers, said Coyne Gibson, manager of information technology.

Share and share alike

Some vendors, including Advanced Computer Communications in Cupertino, Calif., and Proteon, inc. in Westboro, Mass., offer sophisticated bandwidth "sharing" techniques. Advanced Computer's routers take responsibility for dynamically allocating chunks of bandwidth to a given set of traffic based on need. Proteon ensures session integrity with a similar scheme, which requires network managers to reserve the amount of bandwidth they anticipate each protocol will require.

Who does what?

The router companies listed employ the following data prioritization schemes to some degree:

- **Protocol queuing:** Advanced Computer, Cisco, CrossComm Corp., Proteon, Retix, 3Com Corp., Wellfleet.
- **SNA class of service:** Cisco, IBM, Proteon.
- **Bandwidth sharing:** Advanced Computer, Proteon.
- **Prioritization within some routed and bridged protocols:** Cisco, Proteon, 3Com, Wellfleet.

No vendors today prioritize by application; however, if they did, users would likely suffer a performance hit and a destabilization of some applications, Tolly pointed out. It is for this reason that Commonwealth Edison prioritizes only its time-sensitive Digital Equipment Corp. Local-Area Transport protocol. "We don't rank any others because it does add latency to the router," Castle said.

In Brief

Printing standard support

Hewlett-Packard Co., IBM and Microsoft Corp. collectively voiced their support recently for an open standard for network printing management. Specifically, the companies rallied behind Simple Network Management Protocol (SNMP) for network printing. HP printers already support SNMP, but the company said voicing its support was necessary to help clear confusion about network printing management standards.

Dial-in Vines

Centrum Communications in San Jose, Calif., rolled out a version of its remote network server that supports **Banyan Systems, Inc.**'s Vines network operating system. The server will allow travelers or people working from home to connect to their corporate LANs using a phone line and modem.

EDS to deliver movies

Electronic Data Systems Corp. said it has reached a tentative 10-year agreement with hotel movie provider Spectradyne, Inc. in Richardson, Texas, under which EDS will deliver digitized movies to hotels. This will allow hotels to change movies on a daily basis. The initial phase calls for EDS to transmit via satellite, but by early next year EDS expects to install on-site mass storage.

Closer LAN/WAN ties

General DataComm, Inc. said recently that it will offer hardware installation, maintenance and support services to customers of internetworking vendor **CrossComm Corp.** in the continental U.S. General DataComm already resells the CrossComm ILAN family of routers. The companies said they are also collaborating on multimedia internetworking systems for sending a variety of traffic types across wide-area networking facilities.

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Emergency response

Toxins database nixed

By Miteh Betts
WASHINGTON, D C

For more than t5 years, entrepreneurs, fire fighters and some members of Congress have dreamed of a centralized database for tracking all hazardous material shipments in the U.S.

Then, whenever a truck or railcar crashed, officials could dial into the system and know what hazards they faced. A month ago, however, a blue-ribboo panel nixed that idea as just an expensive pipe dream.

Instead of an independent government system, the Transportation Research Board of the National Research Council said it would be more cost-effective to piggyback data on hazardous materials oo electronic data interchange (EDI) and shipment-tracking systems already being implemented by private-sector shipping and transport firms.

Room for improvement

Rep. Douglas Applegate (D-Ohio), the lead sponsor of legislation to create the centralized database, naturally was disappointed with some conclusions of the report.

But he also said the study did verify that the current system of providing information to emergency respooders is inadequate.

Applegate said he will press on for congressional hearings and federal pilot programs to demonstrate the value of computerized information to emergency responders.

Interest in creating a nationwide information system was prompted by highway accidents involving trucks carrying toxic chemicals or radioactive materials [CW, Aug. 20, 1990]. If the paper manifest or warning placards are missing or inaccessible, then fire fighters and other emergency personnel do not know what hazards are present.

The trucking industry was pleased with the report, which confirmed the industry's cootention that the system proposed by Applegate would be impractical and expensive.

The research panel estimated that a centralized system would cost $300 million to start and $250 million a year to maintain, with no assurance that the information supplied to the government database would be reliable or helpful to emergency responders.

Step by step

The committee's report called for a phased approach of adding emergency-response capabilities to corporate information systems and then, perhaps, using a value-added network service provider to act as a clearinghouse.

"Making use of systems that [are] in routine daily use for business purposes would be the best way to attain reliability, and the costs of such a strategy would be much less than the costs of procuring a stand-alone system," the report said.

The study recommended that the U.S. Department of Transportation implement some pilot programs to test the technical, business and human factors involved in hazardous shipment information networks.

VisiNet network software to run under Novell NMS

By Michele Dostert

VisiSoft, a Norcross, Ga.-based subsidiary of Technology Dynamics, Inc., has annoonced that its VisiNet network managemeot software will oow ruo under and report to Novell, Inc.'s NetWare Management System (NMS) platform. No pricing has been announced, but the product is scheduled to ship in the third quarter of this year.

"Whereas NMS will just tell you that you have a problem, VisiNet on NMS collects the historical background of the problem into a database. With the performance data, you can not only diagnose problems but catch anomalies early enough to prevent problems," said Mitch Kramer, an analyst who follows network management issues at Patricia Seybold's Office Computing Group in Boston.

According to VisiSoft executives, VisiNet will add value to the NMS platform by giving user statistics oo NetWare 2.x, as well as additional statistics on NetWare 3.x, from the NMS console. VisiNet will also let users monitor, from within NMS, activity on other network operating systems, such as Microsoft Corp.'s LAN Manager, IBM's LAN Server and other NetBIOS local-area networks. VisiNet on NMS will allow users to run both Simple Network Management Protocol and NetWare IPX applications on a single console.

Enhanced views

VisiNet, whieh can be launched through the NMS console like any other NMS application, will provide a power scripting language for enhanced alarm notification, hierarchical views of the network through a Microsoft Windows-standard graphical user interface and distributed network management.

VisiNet/NMS users reportedly will also be able to import bit-mapped files for custom backgrounds, allowing managers to overlay their logical network ooto a physical map of the premises. Support for Microsoft's Dynamic Data Exchange and Object Linking and Embedding allows alarms to be passed to remote sites.

WAN software

ACC Systems has introduced the ACP 3000 Series of multiprotocol wide-area network (WAN) Small Computer Systems Interface communications processors.

The products were designed for Sun Microsystems, Inc.'s workstations and servers. The series functions as a network front-end processor with one or more WAN connections and provides Sun system users with protocols including X.25 and High-Level Data Link Control.

As many as 24 serial ports can interact with different processors and protocols and various operating systems.

Prices for the ACP 3000 Series start at $3,000.

▶ *ACC Systems*
Suite A
720 Santa Barbara St.
Santa Barbara, Calif. 93101
(805) 963-8801

Gateways, bridges, routers

LANart Corp. has announced its 24-port workgroup hub.

According to the company, the product is a managed wiring hub that, together with a companion 24-port extension hub, provides maximum flexibility and price/performance for as many as 48 users of Ethernet local-area networks.

The 24-port workgroup hub was designed for 10Base-T networks and comes standard with an AUI backbone port. It also provides 24 twisted-pair ports that can be used with either unshielded twisted pair or shielded twisted pair.

The 24-port workgroup hub with Simple Network Management Protocol (SNMP) support costs $1,995. The RS232-managed version costs $1,495. The 24-port expansion hub costs $1,195 for SNMP and $995 for RS232.

▶ *LANart*
145 Rosemary St.
Needham, Mass. 02194
(617) 444-1994

Xyplex, Inc. has announced the 220 Hub/Router, a module that creates an Ethernet subnet in any slot in the hub. It was designed for the Network 9000 Intranetworking Hub series.

When the product is added to a 10Base-T concentrator in a single Network 9000 slot, users within a small group receive their own dedicated 10M bit/sec. of bandwidth, the company said.

Through standards-based routing and bridging, users can communicate with other users connected to the network. The 220 Hub/Router supports routing of Digital Equipment Corp.'s DECnet, Internet Protocol, IPX and Apple Computer, Inc.'s AppleTalk.

The 220 Hub/Router costs $3,750.

▶ *Xyplex*
330 Codman Hill Road
Bozboro, Mass. 01719
(508) 264-9000

X Window System

Integrated Computer Solutions, Inc. has announced the Display PostScript Software Development Kit (SDK) for the X Window System.

The kit provides an open graphics development environment that runs across multiple Unix-based platforms, enabling portability of development work done on one Display PostScript system to another Display PostScript system.

Along with several enhancements, the SDK offers reference material and an extensive set of tools for programming for the X Window System.

A single user price of the SDK is $500.

▶ *Integrated Computer Solutions*
201 Broadway
Cambridge, Mass. 02139
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Systems keep Las Vegas dazzling

By Thomas Hoffman
LAS VEGAS

This city has lights. Lots of lights. And those lights are not just on The Strip. Behind the famous flash and neon of miles of casinos, the homes and businesses of one of the fastest growing regions in the U.S. are gobbling electricity.

That means the Nevada Power Co. has had its hands full trying to keep costs down while attempting to meet electricity demands. The population of the Greater Las Vegas area has swelled more than 30% in the past 10 years, according to the U.S. Bureau of the Census. That growth has fueled Nevada Power's 8% to 10% annual customer growth.

Large commercial customers, including casinos, government agencies and military bases, represent about 40% of Nevada Power's revenue stream.

Analysts said the company's electricity rates are among the lowest in the nation. But like players in other industries, Nevada Power has been forced to keep its information systems budget flat for the past three years, according to Gerald Verchick, the utility's IS facilities manager. "The regional population growth has indirectly had an adverse effect on IS since we're being asked to provide more data while keeping a level IS budget," he noted.

For 1993, Nevada Power allocated $15 million, or 2.5% of its revenue, to corporate information technology.

Furthermore, deregulation in the utilities industry is posing a threat to Nevada Power's near-monopoly of this region.

As a result of these market changes, the $557 million utility has decided to take a sharper look at how it can position its information systems to help meet the needs of its 383,000 customers while keeping its competitors at bay. "The only companies that have survived where deregulation has occurred, such as the airline industry, were those with faster, cheaper information," said Sherry Jackson, manager of Nevada Power's information center.

Move to 4GLs

Nevada Power is leveraging its IS investments in several ways, according to Verchick. The utility has started to shift from its Cobol roots by developing more flexible applications using fourth-generation language (4GL) software.

For example, Nevada Power is currently writing code for Best, or the Budgeting, Estimating, Scheduling and Tracking system, a 4GL-based application that was developed using Software AG's Natural software suite. Best, designed to track the time and material needed for work orders, should be in prototyping by the end of this month. Verchick said Best will access data from a customer information system used daily by 750 of the company's 1,700 employees.

Mainframe application development using 4GL, object-oriented and computer-aided software engineering tools has become status quo in the utilities industry, according to experts. "It makes sense for them to do this in order to be as up-to-date as possible with a mainframe"

Nevada Power, *page 70*

ON SITE

Nevada Power
Las Vegas

Challenge: To serve a burgeoning customer base and forestall competitors.

Technology: IS/9000 Model 522 and RS/6000 servers, D&B Software's Millenium 4GL and Software AG's Natural 4GL system.

Results: Reduced CPU use; renegotiated hardware maintenance agreement. Total savings of $130,000 annually.

Nevada Power's Gerald Verchick *tries to balance customer needs with budgetary realities*

HP user-based pricing stalls

By Mark Halper

When Hewlett-Packard Co. began a transition from processor-based to user-based software pricing late last year, Rich Sevcik, the company's top minicomputer executive, said the switch would not be an easy one. He was right, as far as users of the proprietary HP 3000 line are concerned.

Although it has been six months since HP announced its shift [CW, Dec. 21, 1992], the company has yet to ship the NetLS user-tracking software that will ease HP 3000 shops into the new pricing paradigm.

HP plans to build NetLS into the MPE/IX operating system that drives the 3000 but will not commit to a date, outside of saying it will be available this year.

Users' frustrations came to light recently when an information systems buyer from one of HP's largest customers, State Farm Insurance Cos., aired her concerns at an open microphone session during an HP user conference in April organized by HP user group Interex in Seattle.

Kathryn Nemec, computer products administrator at State Farm in Bloomington, Ind., applauded HP's intentions but bemoaned HP's failure to date to build NetLS into the MPE operating system. Without NetLS, tracking software use is difficult at best, she said.

HP reassured her that it is working on the product. But it does not appear to be coming around quickly.

For instance, HP will not have early versions of the product to show developers who are flocking to an HP "technology camp" in Sunnyvale, Calif., this week.

Other users said they share State Farm's concerns but declined to talk about it on the record. However, they did say they are happy that HP is moving in the right direction, even if slowly, in making the complicated shift.

"I do get a sense of frustration from third-party software vendors and from users that things seem to be taking a long time," said Wayne Holt, director of research and development at HP software partner Software Research Northwest, Inc., a Vashon Island, Wash., developer of higher education administrative programs.

One user noted that even though HP does not yet offer NetLS to track use, it nonetheless charges the shop on a user-based schedule. The source, who asked not to be identified, said the IS shop simply guesses on the low side at its use and notifies HP that it will pay any difference if more users are uncovered later.

Jerry Kopecky, manager of IS operations at IVI Travel, Inc. in Northbrook, Ill., said HP has not communicated plans to offer NetLS anytime soon.

He suggested that in the interim, users may want to develop their own tracking software, or a third-party developer could seize the market opportunity.

As Sevcik noted during the NetLS announcement, one of the tricks will be coordinating with third-party software developers. But before HP and its software partners can begin to get their user pricing schedules in sync, developers will need NetLS specifications.

Once developers receive the specifications, it will still take about six months to write hooks to the monitoring software, noted Birkett Foster, president of M. B. Foster Associates Ltd., a Chesterville, Ontario, developer of end-user tools.

"The HP marketing team was perhaps premature in setting the stage for user-based pricing," Foster observed.

But as Foster and others said, as lengthy a process as it

HP users, *page 68*

Pricing options

Processor-based pricing (or double jeopardy): Users pay more for software as they upgrade hardware, even if they do not increase the number of users.

User-based pricing: Users pay for hardware upgrades only once. Software prices increase only as the shop adds users.

Johanna Ambrosio

Nobody is listening!

There is a massive disconnect going on in IS departments throughout America, based on what I've been hearing from the trenches lately. Conversations with programmers, analysts, database administrators, operations folks and mainframers of other stripes show that what is happening surrounding the adoption of client/server technology is downright disturbing. And this is not just a bunch of "dinosaurs" running scared from the specter of LAN operating systems; there is some of that, but the problem goes much deeper.

The central issue seems to be, in a word, communications. Many mainframers don't understand, because no one's explained it to them, why their companies are in such a rush to throw their mission-critical applications onto a bunch of immature technologies. The mainframers say that all they know, usually, is that someone "in management" has told them to do this new thing. And when they raise questions about a client/server project's robustness or chances of enterprisewide success, they are usually ignored because they are associated with "yesterday's" technology.

"It's like someone telling you: Here's 50 cents, now go and get me a Mercedes," one programmer said. "And if you tell them it's not possible, they give the 50 cents to someone who says he can. Then it turns out he can't deliver it, either."

What's especially onerous is that this is seemingly a breakdown in the core of the IS department. The "us" vs. "them" issues have been going on since the beginning of computing, with the IS and business sides of the house traditionally at odds. And even in the IS shop, there have been different factions for Cobol or Fortran, IBM or DEC. But this is much different. For the first time I can remember, in 11 years of covering this industry, IS managers are perceived as being the bad guys by their own troops.

Out of touch

As one database administrator put it, "IS management has been pressured to become more business-savvy. Well, they have." But in the process, he added, management has gotten out of touch with the "real" world of what is truly possible with today's technology. "Management will promise the business side anything, but no one checks with us to see if it can be done technically," a mainframer said.

What makes this brave new world of client/server computing even more difficult, mainframers said, is the lack of company support, money and time to learn the new technologies, which many mainframers say they want to do. One reason they're having problems is that the training and travel goodies are tending to go to the PC folks these days, and another is because it is almost impossible, especially without the boss' support, to find the time to learn a new job on top of doing your current one.

What amazes these folks is that this seems to be true even when the "server" in a client/server application happens to be a mainframe and when the company has no plans to get rid of the mainframe.

The frustration was evident recently at a database users' group in Dallas. What started out as a discussion of client/server database issues became Complaint Central within about 15 minutes. A small sampling of the discussion:

User No. 1: "Developers are resistant to learning new tools to deliver the client/server applications because they're under deadlines, and it takes time to learn these new tools."

Consultant: "Management feels that if you're working on a smaller box, it should take you less time to do things. They have no concept of the learning curve involved. I was working with one major company where the philosophy was, 'Since you know Rbase, you should be able to design the SQL Server database.' But they're totally different."

User No. 2: "Management says the mainframe mentality is dead, and they found a guy off the street to write the new application. Only that won't work because that guy doesn't have the ability to integrate across platforms and doesn't have a clue about backup and recovery."

Consultant: "People want more data and more ways of getting at the data. At the same time, they also want to move everything out onto smaller boxes closer to the end user. Those are mutually exclusive concepts."

If you're an IS manager and you get this column passed to you anonymously, maybe it's time to have a meeting with the mainframers to iron out some issues.

Ambrosio is a *Computerworld* senior editor, systems and software. Her MCI Mail address is 599-8003.

Lighting firm drives data to outer reaches

By Rosemary Cafasso

While many companies appoint their corporate host as the keeper of data as they migrate to client/server platforms, Lithonia Lighting Corp. in Conyers, Ga., is going in the opposite direction.

The $700 million manufacturer of lighting equipment has designated its distributed network of servers as the corporate database of record and updates its host system once a day, said Jeff Kernan, manager of information systems. The IBM mainframe, which runs Cincom Systems, Inc.'s Supra, is now stabilized, and all new development for the network is on IBM OS/2-based servers, he added.

The strategy, Kernan said, was essentially dictated by an existing network of independent agents that Lithonia supports. However, the strategy is not without risk and requires extra focus on such issues as data integrity and security.

"The step we are taking is the servers are now the corporate systems," Kernan said. "So we have a dispersed data strategy. It's all over the place. I attempt to synchronize it periodically, but it is not in lockstep."

Different drummer

Kernan said Lithonia's strategy may be unusual because the company provides information systems services to a network of independent agents in addition to its internal users.

Furthermore, the sales and inventory-related data that agents produce each day is a more accurate corporate picture than the host system, Kernan added.

This current structure is a transitional strategy as the company moves to a full-blown client/server environment. And Kernan said that while it has held up well, it could also stir up problems.

Lithonia does not have continuously updated information on the big corporate picture. So, if an executive wanted to scan sales activity across the country to determine how certain regions were performing, the data would present a slightly outdated view of activity.

Also, agents do not have direct access to real-time information on Lithonia's manufacturing operation. "Today, we have some discontinuity," Kernan said.

The plan is to pull the manufacturing facilities into the network in 1994.

Another potential problem concerns data integrity. "This is major, and I don't want to minimize it," Kernan said. "It is something we do worry about: Where is the data, and what is the right version?"

Yet Kernan said the speed of the sales cycle is just too fast to keep the "most up-to-date status on every order." Instead, the IS department developed monitoring tools that can alert the corporate staff to system bottlenecks so they can know "when an order gets choked."

HP user pricing

CONTINUED FROM PAGE 67

is, HP seems committed to user-based pricing. For good reason: Users are loud and clear about their interest in moving to a user-priced schedule to overcome the double price jeopardy they incur under traditional processor-based pricing.

In processor-based pricing, IS shops that already pay for a processor upgrade have to pay additional software fees to run on the stronger processor, even if they do not increase the number of users.

"I really dislike it when I change processors and get penalized by software vendors even though I haven't changed the number of people using a piece of software," Kopecky said.

Gary Osborn, chief information officer at Hughes Electronics Space and Communications Division, put it another way. "I like user-based pricing because with processor-based, every time we move up, vendors are sticking their hands out."

Tom Idema, chairman of HP user group Interex, agreed. "When a software vendor hands me a [processor-based] invoice, they may as well have a mask and a gun," he said. "It's robbery."

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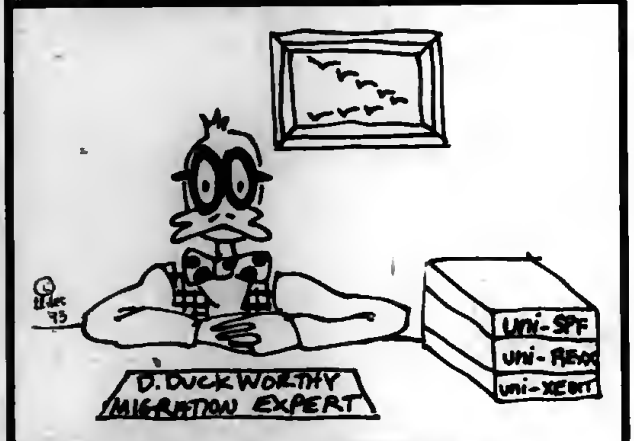

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Users speak out about the 'new' Wang

By Melinda-Carol Ballou

■ Wang Laboratories, Inc.'s reorganization into a software products company is causing grumbling among many users. But advice from those moving to nonproprietary client/server systems is clear: Move carefully and plan ahead.

Service and sales support at Wang has been going through significant changes as the company regroups, although Wang officials emphasize that they will continue supporting VS systems as long as users want and need them to.

But a Wang spokesman said user frustrations would be "short-term." He said accounts will be realigned, and people will be in place soon to service them. "The transition is well under way and should be completed by the end of June," he said.

Regardless, many are moving to open systems. For example, the Gas Research Institute (GRI) in Chicago will keep many VS systems to act as hosts in client/server configurations but will bring in Unix workstation platforms as well.

John Da Silva, a vice president at GRI, and Brendon Edenfield, vice president of information systems at Trans Leasing International, spoke at a recent Coexistence and Migration User Group conference in Chicago. They urged users to investigate options carefully before dropping proprietary Wang platforms.

"Start as early as you can to make plans so that you can move over carefully," Edenfield said. "We love the [Wang] machine and wouldn't move unless we had to. But the benefits are also tremendous once you begin to make the change."

Source: International Data Corp., Framingham, Mass.

Edenfield and others have been feeling the pinch during Wang's downsizing, according to a dozen or so users at the conference. Wang is expected to reach a low of 6,300 employees by the end of the month. Departing Wang employees are coming largely from VS systems manufacturing and to a lesser extent from sales and support, Wang said.

Wang has reduced the number of regions in its U.S. field service organization from seven to four, for example, and it will reduce its direct sales force and emphasize office software, computer-aided software engineering and imaging. Wang will use telemarketing, value-added resellers (VAR) and other third parties for many accounts.

For some end users, these changes have meant the loss of Wang resources.

"They have chosen the customer base that they want to focus on and have turned the rest of us over to VARs," Edenfield said. "Their salesperson told us 'maybe you're too small for us, maybe you should switch platforms.'"

"Wang has been proprietary all along. Now they are trying to be open and flexible, but I needed that five years ago," said Robert Ruzga, director of MIS at Rentokil Tropical Plants, a landscaping service company in Riverwoods, Ill. He added that changes in Wang personnel recently have been disruptive.

"I've had three different salespeople and three different maintenance people. I just wait for them to call me now," he said.

Nevada Power

CONTINUED FROM PAGE 67

approach," said Charles W. Newton, president of Newton-Evans Research Co., an Ellicott City, Md.-based research firm that focuses on the use of IS by utilities. Newton said most U.S. utilities have taken a conservative approach to offloading applications from their mainframes to distributed architectures because of the security that big iron offers.

Going distributed

Nevada Power continued that trend when it upgraded its IBM Enterprise System/9000 Model 320 mainframe to a Model 521 last month. By the end of this year, the company plans to have replaced the bulk of its IBM 3380 direct-access storage devices (DASD) with newer 3390 DASDs, increasing Nevada Power's storage capacity from 84G bytes to 110G bytes.

Nevada Power decided to upgrade its DASD because its applications were growing exponentially, Verchick said. For example, the utility recently replaced its Cobol-based accounts payable and general ledger systems with 4GL-based applications that were developed using Dun & Bradstreet Software Services, Inc.'s Millenium software. Because the 4GL applications are more feature-rich, they require more storage space, Verchick noted.

But Nevada Power was able to partly offset the costs of its mainframe and DASD upgrades when it negotiated a new five-year hardware maintenance plan with IBM last month. Under IBM's Systems Services Agreement, there are no maintenance increases for the first two years and only incremental upgrade charges for the remaining three years. Verchick estimated the deal will save Nevada Power about $30,000 annually.

The mainframe upgrade has added some CPU space, Verchick said. Still, Nevada Power saw additional opportunities to free its processors by moving some of its CPU-intensive engineering and resource planning modeling applications off the dual MVS and VM environments and onto a cheaper, distributed IBM RISC System/6000 platform.

"With the RS/6000, users feel they have better control of their work processes," Verchick said.

In the past, development of long-range planning models, designed to predict power requirements based on factors such as weather data and water availability, took up to two hours on the Model 320 mainframe, which was running at 96% capacity, according to Jackson. That type of modeling can now be done on the RS/6000 in less than 10 minutes, she said.

By moving the applications off the mainframe, Nevada Power is using 20% less CPU space and saving $9,000 per month, or more than $100,000 per year. Nevada Power leases the RS/6000 for $3,000 per month, while the ES/9000 machine costs $44,000 per month.

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Data storage

Hitachi Data Systems Corp. has announced the 7600 Disk Storage Subsystem series designed for IBM-compatible mainframe computers.

The series comprises the 7690 Disk Storage Controller and the 7693 and 7699 Disk Arrays. The 7690 controller has a new intelligent "learning" cache algorithm to enhance performance. The 7693 Disk Array provides up to 90G bytes of storage in one frame.

The 7699 Disk Array provides up to 270G bytes of storage in a single direct-access storage device frame, the company said.

Prices for the 7690/7693 Disk Array range from $425,000 to $2 million. The 7699 is slated to ship during the third quarter of 1994.

▶ *Hitachi Data Systems*
750 Central Expressway
Santa Clara, Calif. 95056
(408) 970-1000

Utilities

Softworks, Inc. has introduced Performance Solution Version 1.1, an integrated tool designed to improve systemwide performance.

The product consists of three components: HiperLoad Plus for VSAM, I/O Plus for VSAM and I/O Plus for XSAM. The components work in tandem to decrease I/O operations.

According to the company, Performance Solution optimizes VSAM, QSAM and BSAM processing dynamically. A "time-of-day" sensitivity feature gives users the ability to balance processing work loads.

Based on file processing history, the product can also automatically choose an optimal buffering technique.

License fees begin at $24,000.

▶ *Softworks*
7700 Old Branch Ave.
Clinton, Md. 20735
(301) 856-1892

Executive Software, Inc. has started shipping Version 2.1 of I/O Express, an automatic data-caching software product.

An I/O View graphics utility has been added to this version that pinpoints and displays boosted system speed and increased I/O throughput.

According to the company, I/O Express speeds up response time and can eliminate I/O bottlenecks on Digital Equipment Corp.'s VAX/VMS systems. With an I/O View menu, users can select several new functions, including a Graph Utility and a Report Utility.

With the Graph Utility, users can create a real-time, bar-graph depiction of the I/O activity on the system.

A graphic representation of the I/O activity over a designated period of time is achieved with the Report Utility, a feature that sends output to a printable file.

Prices range from $480 to $19,800, depending on CPU model.

▶ *Executive Software*
6th Floor
701 N. Brand Blvd.
Glendale, Calif. 91203
(818) 547-2050

Jensen Research Corp. has announced Xrefplus Release 2.4, a Job Control Language and procedure cross-reference utility.

According to the company, the product was designed to provide easy and efficient access to critical system information. Xrefplus operates on MVS, MVS/ESA and MVS/XA operating systems in batch and interactive modes.

New features include a job scheduler exit point, critical data set reporting and an ISPF interface created to increase productivity. A reference database of key cross-reference information can be made with Xrefplus DB, an optional add-on product.

Prices range from $12,000 to $27,000.

▶ *Jensen Research*
169 Ramapo Valley Road
Oakland, N.J. 07436
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Power supplies

EPE Technologies, Inc., a subsidiary of Square D Co., has announced the EPS 6000 three-phase uninterruptible power supply family, designed for large data center and computer mainframe applications.

According to the company, EPS 6000 is 100% rated for nonlinear loads with crest factors as high as 3.5 and offers output voltage distortion of less than 4% total harmonic distortion. Computer-aided fault diagnosis, telemonitoring capabilities and remote signaling and reporting systems features have been provided for ease of service and maintenance.

EPS prices range from $75,000 to $100,000.

▶ *EPE Technologies*
1660 Scenic Ave.
Costa Mesa, Calif. 92626
(714) 557-1636

Para Systems, Inc. has introduced the LANMaster software. The product is Microsoft Corp.'s Windows-based software designed to work in conjunction with the company's Minuteman PM Series uninterruptible power supply.

The software provides information including power load, AC voltage and temperature. The information is shown on a monitor in bar graph and LED format. In the event of a utility power failure, the software can automatically activate a timer, enabling users to keep working while warning them of a potential system shutdown.

LANMaster disables all log-ins when a power failure is detected; when power is restored, it informs users and returns to a normal monitoring state. An unattended shutdown capability is also provided.

LANMaster software is priced at $119.

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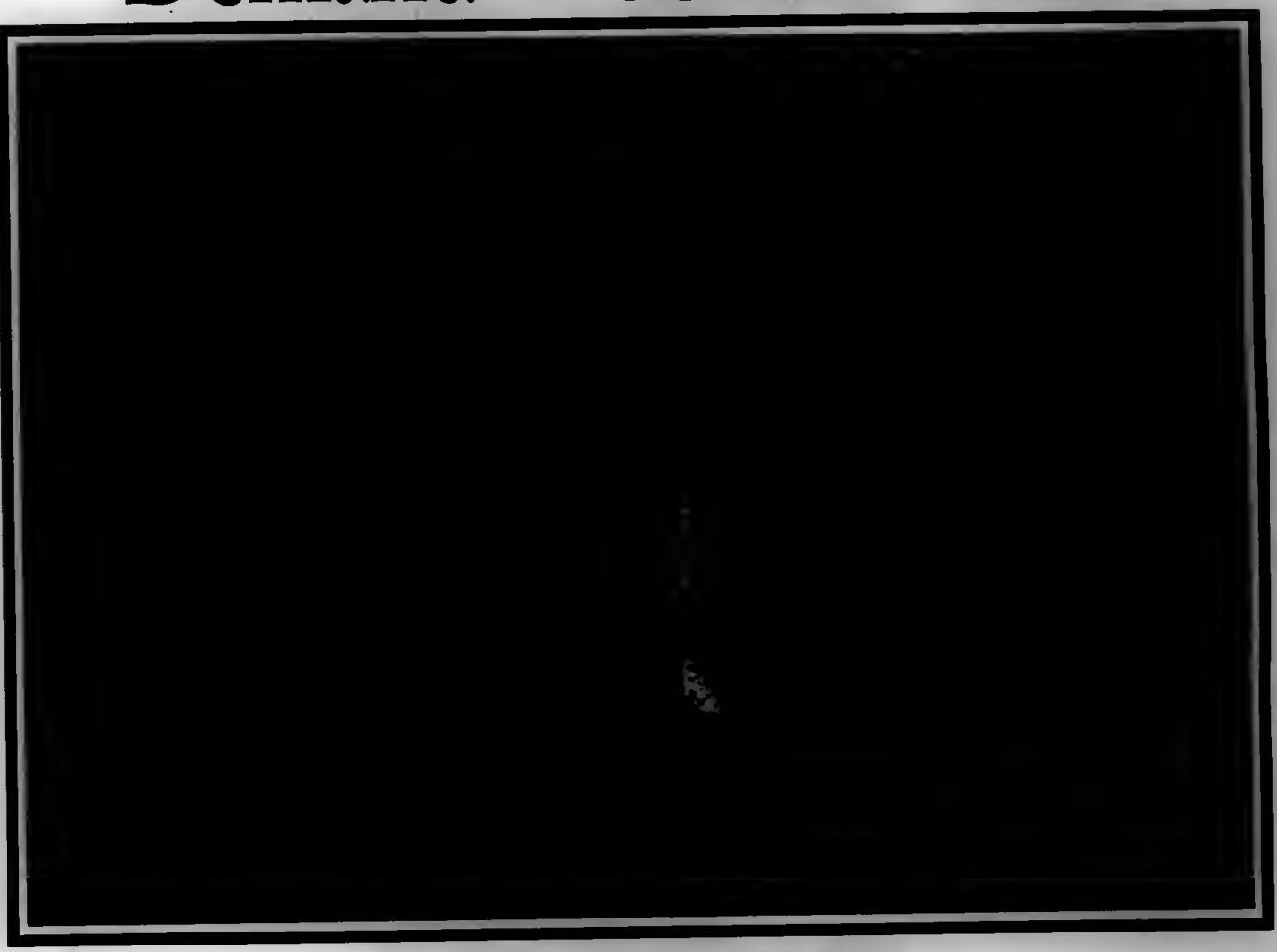

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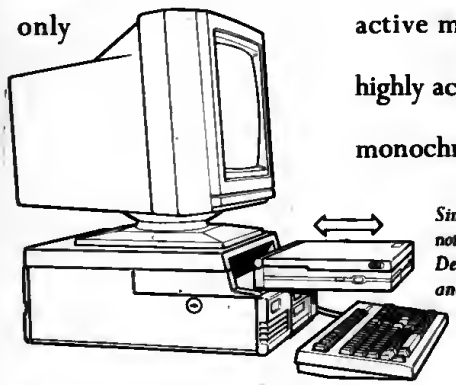

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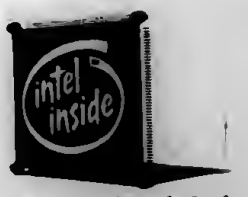

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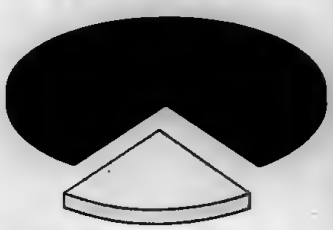

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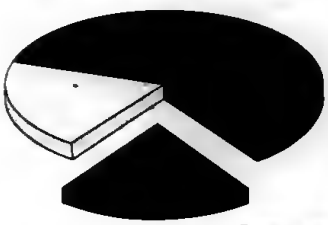

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SAS soft-pedals object-oriented tools

By Gary H. Anthes
NEW YORK

Contrary to popular perception, vendors do not always hype their products:

■ "I don't see [object-oriented programming] as a panacea," said James Goodnight, president of SAS Institute, Inc. "We've had subroutine libraries for years that have done the same thing as objects."

■ "We don't expect everyone to jump on the object-oriented application development bandwagon immediately," agreed Linda Fineman, application development project manager at SAS.

■ "Our strategy with object-oriented applications development is to provide a robust set of tools without alienating those people who opt not to use [them]," added Jamie Robbins, SAS' applications development marketing manager.

If that all sounds like damning with faint praise, listen to this user of SAS' new object-oriented programming (OOP) tools:

"OOP is quite a revolutionary approach; it makes a big difference," said Khasha Dehnad, manager of decision support executive information at The Depository Trust Co. in New York, which recently built an executive information system (EIS) using SAS' object-oriented products. "It's not just a way of programming. It's a way of thinking."

Dehnad used SAS/EIS, a development environment that includes a collection of predefined displayable objects for building an EIS, to build a pilot "management by objective" system that will allow senior managers to capture and monitor performance against goals.

Object creation

A Frame entry is a new kind of catalog entry available in Release 6.08 of the SAS system. Like Program entries, their predecessor, Frame entries are used to build and run interactive applications. But object-oriented programming concepts give Frame entries enhanced capabilities to create more graphically oriented applications. They are templates for creating objects that can be displayed as icons.

Productivity increase

Dehnad also used the SAS/AF application development facility, with its new Frame feature, to create objects not already supplied in SAS/EIS. In creating the EIS, he said the technology reduced development effort by a factor of 10 for functions for which SAS supplied a predefined object and by roughly 50% in cases where the user had to create his own objects using Frame entries.

Dehnad said he used SAS/AF to create an organization chart object represented by an icon that the user can click on to traverse the company's chain of command.

SAS, *page 78*

Down the road

SAS CUSTOMERS SAY OBJECT-ORIENTED PROGRAMMING IS A "FUTURE"

Has your organization embraced object-oriented technology?

On a scale of 1 to 5, with 5 being very important and 1 being not important, how do you rate the following attributes of an application development system?

	Not important				Very important
Fast prototyping	12%	6%	16%	26%	41%
Portability of code	20%	10%	19%	25%	26%
Menu-driven developer's tools	8%	17%	30%	27%	18%
Object-oriented	9%	14%	36%	26%	15%

Source: SAS Institute, Inc., Cary, N.C.

CW Chart: Michael Siggins

Tool kit maker vows to crank up idle systems

By Melinda-Carol Ballou
MINNEAPOLIS

Want to take advantage of the processors that are idling on your network or create a single "virtual computer" system out of multiple platforms?

Vendors ranging from Hewlett-Packard Co. and Convex Computer Corp. to software manufacturers such as VXM Technologies, Inc. have touted the performance and other benefits of distributing application processes across networks. A lack of flexible, easy-to-use development tools, however, has prevented users from taking better advantage of their underused systems.

Aggregate Computing, Inc. will seek to remedy that situation later this year when it releases NetShare, a set of tools that will go into beta testing this month. The tools are scheduled to ship during the fourth quarter on Unix workstations from Sun Microsystems, Inc., HP and IBM.

Resourceful

NetShare will transparently determine which computers are in an environment, the availability of the computers and which resource fits an application's need and then remotely execute an application, according to John Rymer, an analyst at the Patricia Seybold Office Computing Group, a Boston consulting firm.

NetShare will allow users to take and execute applications in parallel on separate machines.

The Resource Management Service provided by NetShare determines what the machines are doing on the network and how busy they are.

NetShare is made up of three components — a Remote Information Base (RIB), a Decision Making interface (DMI) and a Remote Execution Service (RES) — and a set of application programming interfaces (API) to the components.

RIB includes a database that stores information about network resources; information in the database is collected from agents that represent those resources, Rymer said. These agents collect current values for a resource and forward them to the RIB so the database is constantly updated. (The resources are set up as objects in the RIB.) Intelligent resources, such as operating systems or database management systems, can forward information directly to the RIB. Aggregate Computing provides an API to the RIB so third parties can forward information to it.

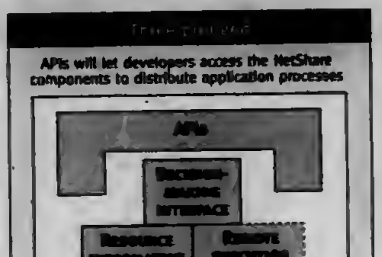
"We have an object-structured database so that every characteristic about a machine is an object such as software licenses, for instance, and other attributes," said Joan Wrabetz, Aggregate president. "It's extensible so that users can add other resources. We don't cite policy and we allow users to customize [the facility] as they need to. In this way, an application can [be set up to] choose a machine based on its needs."

NetShare's DMI allows applications to communicate with the RIB.

The RES lets developers execute multiple tasks in parallel: A single client can start multiple jobs on remote processors and then wait while each remote node returns its results.

"NetShare will be a valuable contribution to distributed object computing services [since] environments such as DCE, ONC and NetWare have stabilized the basic plumbing required for distributed applications but don't provide all the services required by developers to create useful applications on distributed platforms," Rymer said.

NetShare will offer hooks into either Sun's Open Network Computing (ONC) or the Open Software Foundation's Distributed Computing Environment (DCE).



Aggregate is currently shipping NetMake, a parallel version of the Unix "make" utility that uses NetShare as its core technology. NetMake will find machines that are relatively idle but have the same operating system version and appropriate CPU to run the processes in parallel.

User reaction

Users of these products have already experienced some of the performance advantages of NetShare and said they look forward to the development kit.

Ken Streeter, a software engineer at Lockheed Sanders, Inc., a defense electronics manufacturer in Nashua, N.H., is currently using NetMake with a pool of Sun workstations.

"We've seen about about a five-fold improvement. Things that took 15 minutes now take three," Streeter said. He added that a NetShare developer's tool kit would enable his company to develop distributed compute-intensive signal applications.

NetMake user Milo Chan, a vice president at JP Morgan Securities, Inc., a New York securities firm, said any computationally intensive application could benefit from a distributed API such as NetShare "where the work load can be broken up across multiple processors." He added that the product was simple to install and that JP Morgan experienced "dramatic improvement" in the compile time of its financial and analytic applications after it brought in NetMake.

SAS soft-pedals object-oriented tools

CONTINUED FROM PAGE 77

it allows the user to zero-in on a given manager's performance and then trigger a Gantt chart, variance report or detailed goals listing for the employee.

A user can click on a predefined "hot spot" in the organization chart, triggering the execution of SAS code that, for example, graphically displays a given manager's subordinates or summarizes and displays the manager's goals. The chart object is re-created at runtime to reflect the latest changes in a master personnel file.

Dehnad's enthusiasm for objects extends beyond initial application development to maintenance as well, where he described the contribution of the approach as "phenomenally great."

"If the programmer quits, I know what the object is, how it works, where to find it and so forth," he said. In addition, changes to an object are made once in the library where the object resides and are effectively propagated to all applications that use the object.

Tough sell

Demonstrations of the Frame feature of SAS/AF drew standing-room-only crowds at SAS' recent user conference here, but SAS acknowledged that many users remain uncommitted to the technology.

Indeed, in a recent survey of its customers, SAS learned that just one in four had embraced OOP. And although the survey showed users generally felt the technique was important, they said other things — such as fast prototyping and portability of code — were significantly more important (see chart page 77).

Fineman said resistance to OOP stems more from the natural tendency of programmers to avoid change than from any fundamental characteristic that makes the technology unsuitable in certain circumstances.

Of SAS' apparent caution in touting the benefits of the technology, Fineman said, "artificial intelligence was hyped as the solution to everything, but then people found it was not. People were so disappointed they kind of wrote it off. That could happen to OOP, too."

The Information Technology Co. in Gainesville, Fla., is using the object capabilities in SAS/AF to speed application development. The types of things that previously were changed between batch runs — such as time periods, companies or geographic areas to be considered in market-share analyses — are now set up in displayable objects that can be changed on the fly.

The increased ease of use and decreased development time will enable users to try what-if analyses that they might not have bothered with previously, said Randy Lawton, systems analyst at the company.

Lawton said objects enable programming standards to be defined and enforced. "For example, if you want text-entry fields to always be yellow, SAS has a text-entry field object and you can set the color any way you want and then put it in a standard library," he said.

Craig MacDonald, staff consultant at Information Industries, Inc. in Kansas City, Mo., uses the Frame feature to create reusable objects that less technically sophisticated application developers then use as system building blocks. "When they use this code, they have to write only about three lines in their programs to get it to operate," he said.

In Brief

Reaching for more platforms

Blyth Software in Foster City, Calif., recently outlined its plans for porting its application development tools to new platforms. Currently based on Microsoft Corp. Windows and the Apple Computer, Inc. Macintosh, Blyth's Omnis 7 Version 2 will be extended to be binary-compatible with IBM's OS/2, Microsoft's Windows NT and the Open Software Foundation's Motif Unix environment. Blyth said it expects the cross-platform products to be available in 1994.

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Languages

Micro Design International, Inc. has introduced the Express Development Language (XDL).

According to the company, XDL is a fourth-generation language that includes object-oriented extensions for developing complex custom applications.

The product is part of the company's Express Development Environment (XDE), which comprises a specialized program editor, a pseudo-code compiler, a Project/Source code manager, execution engines and a set of built-in object classes.

An assortment of functions is provided with the built-in classes that offers standard Microsoft Corp. Windows controls, Visual Basic Custom Controls and accessibility of Borland International, Inc.'s dBase-compatible databases. Users can build applications with serial communications, charting, multimedia, graphics and more.

The Professional Development Version of the XDE costs $695, and the Corporate Version costs $1,295.

▶*Micro Design International*
6985 University Blvd.
Winter Park, Fla. 32792
(407) 677-8333

Compilers

Liant Software Corp. has announced that SunSoft, Inc. will bundle Version 2 of Liant's high-performance LPI-C compiler and the Motif version of its CodeWatch debugger with SunSoft's Interactive Software Development System.

According to Liant, the Interactive Software Development System is an optional extension to SunSoft's Interactive Unix System. Designed for Intel Corp.'s X86-based platforms, Version 4.0 of the Interactive Unix System is a 32-bit multiuser, multitasking operating environment.

Version 4.0 can be used for point-of-sale, factory automation and process control. Liant's LPI-C Version 2 is an ANSI C compiler that is used for developing Unix applications for Intel's X86 and Sun Microsystems, Inc. Scalable Processor Architecture platforms. It generates highly optimized code that runs up to 80% faster than its predecessors, the company reported. LPI-C Version 2 also has the ability to compile pre-ANSI source code.

The Interactive Unix Software Development System costs $795.

▶*Liant Software*
959 Concord St.
Framingham, Mass. 01701
(508) 872-8700

Code libraries

EMS Professional Shareware has started shipping an updated version of the PAL Utility Library.

The library has an additional 119 products for a total of 434 public domain and shareware Paradox Application Language products for users of Borland International, Inc.'s Paradox.

According to the company, the products are compressed onto 12 1.44M-byte disks or one CD-ROM and are detailed in an indexed database that is included.

Users can find specific Paradox products by searching by name, vendor, release date, free text across descriptions or type.

An assortment of types of files is provided that contains Applications, Data Entry, Data Dictionary, Configuration, MailMerge and Paradox for Windows, among others.

The library costs $59.50 on disk or CD-ROM.

▶*EMS Professional Shareware*
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Strength *in* numbers

IS consortia can help companies tame technology troubles and cut costs. But getting there takes money, time and nerves of steel.

Trader Joe's Fred Morsheimer *was unsatisfied with Spectet, a consortium of IS managers from the retail industry (see story page 83)*

Kim S. Nash

Picture this: Top information systems managers from rival automakers, stoked on coffee and danish, lay aside deep rivalries and advise one another on the finer points of establishing PC end-user help desks.

Unlikely, you say? Guess again: The meeting happened recently in the cornfields outside Bloomington, Ill., when Toyota Motor Corp., Mazda Motor Corp., Mitsubishi Corp.'s Diamond Star Motors and others gathered for an annual informal meeting to hash out common IS problems.

Increasingly, IS managers in industries ranging from oil, utilities and automobile manufacturing are seeing distinct money-saving possibilities in brainstorming and teaming up with rivals.

More and more companies are willing to shell out as much as $1 million a year in hopes of finding new and better ways to tackle common IS challenges, such as redesigning telecommunications setups or reducing application development backlogs — many of which are cropping up in big client/server projects.

Supporters say collaborating with competitors could be a matter of survival.

"You worry at first about sharing too much," says Rex Schemerhorn, IS director at Diamond Star in Normal, Ill. "But we all pretty much know what's taboo." Since 1989, Diamond Star has been meeting informally with several other Japanese carmakers with large U.S. plants.

Mike Connors, senior vice president of MIS at The Gap Stores, Inc., agrees: "No, you don't want to be partners with your competitors. But in this economy, you want to be smart."

The San Francisco-based clothier co-founded Retex, a consortium of 90 specialty retail companies that banded together to leverage their combined buying power to save money on equipment and services.

Participating in the half-IS consortia, *page 82*

IS consortia

CONTINUED FROM PAGE 81

dozen or so IS consortia isn't quite sleeping with the enemy. But participants warn that it does take a certain amount of grit and faith.

To avoid divulging sensitive information, many consortia-goers are briefed by superiors before attending meetings with rivals, says Jim Weber, president of Omicron, a 12-year-old consortium of large New York and Chicago firms.

"I've found that giving up secrets is not a problem. You get past it," Weber says.

Gaining an edge

There are other issues to sidestep, too, including past failures such as Specnet (see story page 83). Skeptics like to say that such infighting will prevent consortia from becoming a major force in IS.

Plus, notes Richard Murray, consultant at Nolan, Norton & Co. in Boston, more and more companies are depending on technology systems to give them a leg up on rivals. And that, he contends, means IS know-how is better kept secret.

To illustrate, Murray notes that five years ago the health care industry might have been a good consortium candidate. But growing fears that the Clinton administration's health care agenda will slice deeply into profits have made these firms wary and insular, he says.

"They won't want to give away technology innovations," Murray argues.

Antitrust laws and bitter rivalries also deter some industries, such as wood products, from forming IS consortia, he adds.

Nevertheless, a good number of Fortune 500 firms — in some historically cutthroat industries — choose to participate in IS consortia (see chart below). Some groups are reporting booming growth.

The Petrotechnical Open Software Corp. (POSC), for example, began with five oil companies in 1990. It now boasts more than 75 participants.

"The oil industry is *very* competitive," says Ted Lumley, chief of technical computing at the Dallas-based exploration and production unit of Mobil Oil Corp. "But we just said, 'Look, we have enough in common in uncontroversial areas to really get something done.'"

> "You worry at first about sharing too much. But we all pretty much know what's taboo."

Lumley's division and four other petroleum firms founded POSC to set industry standards for application development and client/server computing.

Members say consortia pay off in different ways, depending on their goals and the strength of the commitment among members.

Connors, whose company was a member of Specnet before founding Retex, was all for another go-around with the consortia concept because he believed IS professionals in the same industry can teach one another about new technologies and save money on services and equipment, he says.

Indeed, cost-saving is among the most attractive lures, according to boosters.

Bottom-line advantages "are there for the taking when you work together on some projects," says Greg Purdue, director of software development at Paul Harris Stores, Inc., an Indianapolis-based clothier and Specnet member. The firm dropped Sprint Corp. in 1991 because of a special deal Specnet worked with MCI Communications Corp.

Consortium members get discounts based on the volume of calls they place each month via MCI, ranging from 6% to 7% of their annual phone bills.

Paul Harris Stores, for example, saves $7,000 — about 7% — off its typical yearly charges, Purdue says. "That kind of kickback helps, let me tell you," Purdue notes. Retex has a similar telecom deal with MCI.

Specnet has also cajoled vendors to provide special services. Sterling Software, Inc. and MCI agreed to jointly offer electronic data interchange equipment to Specnet members at a discount.

"Any type of group where we can get control over vendors is good," Purdue notes.

Sometimes control comes via togetherness. Take POSC, which counts hardware and software makers such as IBM, Digital Equipment Corp. and Sybase, Inc. among its members and maintains close ties with the Open Software Foundation.

Three years into a five-year business plan, POSC is poised to roll out petroleum-specific data and process models in July.

Lumley says software makers and other oil companies will be able to use the models as blueprints for building Unix-based client/server systems customized for the petroleum industry.

He adds that POSC has racked up more than 800 work-years on the project so far. "That's a huge investment," he notes.

But not as huge as the cost of joining many consortia.

At POSC, for example, each of the five founders promised in 1990 to chip in $1 million per year until this year, plus annual dues of between $1,000 and $500,000, depending on yearly sales. Those sums can deter some firms, Purdue acknowledges. (In contrast, Omicron charges $12,500 the first year and $9,000 annually thereafter.)

Patience is a virtue

Also needed with that ante is a hefty dose of patience. Purdue says he does not expect to see any tangible benefits from POSC until 1994 — after a four-year, $3 million-plus investment.

"But," he says confidently, "the goods will be there."

Purdue cites the improved performance and better data sharing opportunities that a well-laid client/server operation can yield. He's also counting on common data access methods and user

Alive and in consort

CONSORTIUM	INDUSTRY	FOUNDED	LOCATION, PHONE	NO. OF MEMBERS	MEMBERS
[illegible]	[illegible]	[illegible]	[illegible]	3	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	45	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	75	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	500	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	200**	[illegible]

[illegible]

Joining a consortium

interfaces to speed up report-writing.

Further, he'd like to see off-the-shelf applications from value-added resellers that he can buy and use immediately. "Giving software companies the specs we develop should guarantee plug and play," Lumley says.

Tired industries get boost

But supporters say consortia can help even when problems aren't as an courant as client/server computing. They are equally helpful in dealing with managing data storage or greasing conversation between CICS mainframes and Unix workstations, to name two.

The auto industry — which some say is too mired in bureaucracy to step lively among new IS ideas — is a good example.

Diamond Star, which manufactures the Mitsubishi Eclipse, sidestepped potential problems in swapping IBM and third-party mainframe disk drives by talking first with a rival automaker that had recently done the same thing, Schemerhorn says.

He and his staff gathered intelligence about making the switch during a meeting of Japanese car companies that have plants in the U.S.

"It's like a user group, but there's common jargon," Schemerhorn says. "We all work on the same kinds of things but are at different stages. You can find a counterpart to give you some good do's and don'ts."

That's how Schemerhorn avoided potential glitches in a large-scale rollout of PCs at the historically mainframe-centric site. Competitor Mazda, which has a few thousand PC users, walked Diamond Star through setting up internal user groups and help desks. "We learned from their experience," Schemerhorn says.

The group persuaded a local IBM representative to host the meeting on a neutral ground: a regional sales office. Although IBM hosts, Schemerhorn says attendees control the agenda. "It's not an IBM fest," he says, though members asked IBM to make presentations on topics such as OS/2 networking.

While all this might sound like group therapy to some, other observers counter that members get more out of meeting than simple catharsis. Utilities are a strong example.

Atlanta Gas & Light Co. might "still be developing applications" were it not for its membership in a utility consortium, says Vice President of IS Bill O'Neal.

The company bought a skeleton customer service system from Brooklyn Union Gas Co., then customized the application for Atlanta's specific needs. The system was installed in 22 months, two months ahead of schedule.

Some analysts say they believe the utility business is ripe for sharing some software development burdens such as front-end application analysis and design work.

That's because government regulations on the industry force common data reporting and tracking methods. Companies can share data models and, in some cases, entire business designs.

Some firms have, as part of an 8-year-old task force, dedicated to building an efficient customer information system geared specifically for utility companies, says Richard Evans, director of software engineering at Cincinnati Gas and Electric Co.

Evans says it was tough at first because the firms run diverse hardware platforms. Plus, regulations varied widely between states, he explains.

Participants jumped these potholes by focusing on general customer service tasks that could be translated into reusable templates for IBM DB2-based applications — a platform they all use. Applications developers at a few dozen utilities across the U.S. banded together to cut development costs by sharing front-end application design work.

For example, firms such as Brooklyn Union and National Fuel Gas Co. in Buffalo, N.Y., together sketched minimum requiremenis of an efficient customer service application, then each went off to draw up different parts of the design.

Consorting with rivals may sound scary at first, but the relationship doesn't have to be cantankerous. Supporters say consortia can deliver less expensive IS gear and smooth the transition to new technologies.

But, the consortia-wise add, don't make the leap of faith without a safety net of carefully planned administrative rules and guidelines about off-limit subject. You don't want to give away all your secrets. ■

Things don't always work out

Despite all the current popularity, IS managers would be wise to keep in mind that, as with marriage, not all consortia work out.

Consider Specnet, forerunner to today's Retex consortium.

Formed in 1991 by IS managers at several top retail specialty firms, the consortium had lofty goals. And it worked — for a while.

Members used their collective buying brawn to muscle MCI into providing cheaper long-distance telephone rates, saving a total of $6.5 million, according to the National Retail Federation (NRF), a New York association of retailers that oversees Specnet.

However, 10 of 12 founding board members defected last August after disagreements over how the NRF spent that savings and Specnet's pot of membership fees.

"We were extremely dissatisfied with how [Specnet] was run," says Fred Morsheimer, MIS director at Trader Joe's, Inc., a specialty foods chain based in South Pasadena, Calif. "We didn't know where our money was going some of the time. And other times, we thought it shouldn't be going where it did."

"It just didn't work the way we imagined it would," says Richard Paul, former Specnet chairman. He says Specnet board members clashed with NRF officials over which body should make financial decisions.

The tiff has not yet turned into a legal battle, but bad blood clearly flows between the NRF and ex-Specnet members. — *Kim S. Nash*

Intelligence Files

Just-in-time hospitals

Hospitals need to improve customer service and reduce costs, and yet entrenched and compartmentalized hospital bureaucracies resist improvements such as just-in-time inventory systems.

"Stockless" inventory systems require cooperation and information flowing among various hospital departments, but that is not likely to happen unless there is serious pressure from upper management. Top management backing for interdepartmental coordination is elusive, however. A survey of 250 hospital department managers found that coordination of this sort was not rewarded by their superiors.

Source: Pennsylvania State University news release, April 27, 1993.

Third wave

What comes after client/server? Industry analyst William Bluestein says the next wave will be "social computing." He defines that as technology embedded in the way people work, live and play — and satisfying the currently unmet needs of Joe Sixpack. The emerging technologies will be even smaller computers for true mobility; new operating systems that are invisible; wireless Internet-like networks; and on-line services that provide answers, not just access to raw data.

Source: "The Third Act," a report from Forrester Research, Inc., Cambridge, Mass.

Tool time for managers

Technology is only one enabling element in the output of an information systems department. Of equal if not greater importance are the people responsible for producing the systems. Productivity and effectiveness in the IS group are directly impacted by the first-line managers, many of whom may not have had a chance to develop the managerial knowledge and skills needed to establish productive work environments.

Those wishing to understand and make a difference in the management of IS professionals need tools for measuring these differences.

Source: "Measuring the Information Systems Supervisor's Work-Unit Environment and Demonstrated Skill at Supervising," Thomas W. Ferratt, Larry E. Short and Ritu Agarwal. *Journal of Management Information Systems/Spring 1993*, Vol. 9, No. 4, pages 121-144.

Withholding payment

Many companies focus on improving customer service in front-end processes (such as sales), but customer service often breaks down in the back office due to erroneous invoices and poor delivery. These administrative problems, in turn, can hurt the company's cash flow because customers will withhold payment on the disputed invoices. In a survey of 102 large companies, 51% said they have withheld payment of a supplier's invoice because they were dissatisfied with the level of customer service they received.

Source: Resource Evaluation, Inc., Harrison, N.Y.

Mitch Betts

What about ethics?

These days, IS executives may do windows, but they don't do ethics.

The troubling thing is . . . oops, I used the dreaded "E word" up there. As computer security guru Donn B. Parker once said, talking about ethics makes people's eyes glaze over, so you have to give them juicy examples to keep them interested.

So — quick — consider the case of Julie, a bank IS executive who was asked by the marketing department for access to customer data extracted from mortgage applications. Marketing wanted to use the data, which included income and debt history, in a marketing campaign.

Although several mortgage managers complained, Julie delivered the data anyway, figuring it was not her job to be a data cop. Eventually, a local reporter working on a story about privacy got on the case, and the bank CEO had to diffuse a potential public relations disaster.

Afterwards, the CEO reprimanded Julie for not taking responsibility for ensuring data privacy and not raising the issue with senior executives.

This real-life scenario (with some details disguised) is courtesy of H. Jeff Smith, an assistant professor at Georgetown University, and his column in the March/April issue of IBM's *Beyond Computing* magazine.

'Not my job'

After interviews with dozens of IS professionals, Smith has come to the conclusion that many of them consider data privacy and other ethical issues to be "not my job," even when they harbor private concerns.

Another real-life scenario involves car dealership software, which prints out fancy calculations that bamboozle consumers into thinking it is cheaper to buy a car with a loan than to pay cash. The software vendor denied wrongdoing and said it was merely computerizing a common industry practice.

Fortunately, the Federal Trade Commission put a stop to that nonsense. But both cases raise an interesting question: Why do we depend so much on the threat of publicity or government action to get some ethics around here?

Thank goodness some flagrant abuses are exposed and stopped, but it is doubtful that any government body could ever be vigilant enough to put an end to abuses of the power of computer technology.

That sobering point was made by John A. Loughney, professor of philosophy at Westfield State College in Westfield, Mass., during the Computer Ethics institute Conference in 1992. Loughney suggested part of the problem is that the organizational culture of the corporation is not well-suited to considering the larger social ramifications of our work with information technology.

In most companies, the emphasis is on putting systems into action as quickly as possible — an atmosphere that makes it hard for someone to raise a hand and point out some ethical glitch. It certainly is not considered a career-enhancing move.

No procedure in place

That's why it was hard for Julie to stand up to marketing. After all, she thought her job was to facilitate the business use of data as soon as possible. And in most corporations, there is no readily available forum or procedure for raising ethical doubts.

All of this reminds me of an idea floated by Ben Shneiderman of the University of Maryland a few years ago. He urged organizations to develop a "social impact statement," much like the government's environmental impact statements, at the outset of every IS project so social and ethical issues can be raised before the project design gets too far along.

We do need to develop corporate mechanisms for raising social and ethical concerns, but at the same time we must remember that ethical conduct is mostly an individual matter. While company ethics programs may come and go, real ethics are embedded in the little decisions that individuals make on a daily basis.

Betts is *Computerworld*'s national correspondent, based in Washington, D.C.

The TEN Commandments of Computer Ethics:

1. Thou shalt not use a computer to harm other people.
2. Thou shalt not interfere with other people's computer work.
3. Thou shalt not snoop around in other people's computer files.
4. Thou shalt not use a computer to steal.
5. Thou shalt not use a computer to bear false witness.
6. Thou shalt not copy or use proprietary software for which you have not paid.
7. Thou shalt not use other people's computer resources without authorization or proper compensation.
8. Thou shalt not use other people's intellectual output.
9. Thou shalt think about the social consequences of the program you are writing or the system you are designing.
10. Thou shalt always use a computer in ways that demonstrate consideration and respect for your fellow humans.

Source: Computer Ethics Institute, Washington, D.C.

Executive Track

James J. Cunnane has been appointed senior vice president of finance and administration at **General Dynamics Corp.**

In this expanded capacity, Cunnane, a 15-year veteran of the Falls Church, Va.-based company who has served as its chief financial officer since 1989, will oversee information systems and administrative services.

A recent promotion has expanded the duties of **Brad Iversen**, marketing services executive at **NationsBank Corp.**, into the areas of Olympic sports and IS. Iversen, who joined the Charlotte, N.C.-based company in 1988 as a consumer marketing division executive, is now also spearheading marketing strategy for the bank in its capacity as a sponsor of the 1996 Olympic Games and taking on responsibility for automated banking.

Kenneth King is the new executive director of the **Corporation for Research and Educational Networking** (CREN). The Washington, D.C.-based company is the not-for-profit corporate parent of **Bitnet**, a network connecting some 550 higher education networks in the U.S. and 700 international affiliates.

King, who came out of retirement to help spearhead a new networking agenda for Bitnet as head of CREN, brings four decades of higher education/information technology experience to the post, including stints as vice provost for computing at Cornell University, vice chancellor for university systems at the City University of New York and director of computing at Columbia University.

In Purchase, N.Y., John L. Scala has been named **managing director of MIS at National Realty and Development Corp.** In addition to his new responsibilities, Scala will continue in his current position of controller.

Neil Chernoff recently joined the management consulting firm **CSC Index, Inc.** as a vice president in the San Francisco office. Chernoff comes to CSC from Booz Allen & Hamilton, Inc., where he served as chief information officer.

Have you or a colleague in the information systems field recently been promoted? *Computerworld* would like to share the news with the rest of the IS community. Please contact senior editor Nell Margolis at (800) 343-6474 to pass along the news.

Calendar

JUNE 13-JUNE 19

Electric '93. Atlanta, June 15-17 — Contact: Walter Charnizon, Continental Exhibitions, Inc., New York, N.Y. (212) 370-5005.

Replitech International. Santa Clara, Calif., June 15-17 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Successful Mainframe Downsizing in the Financial Industry. New York, June 15-17 — Contact: Uniforum Association, Santa Clara, Calif. (408) 986-8840.

IS as a Service Organization. New York, June 16-17 — Contact: Ouellette & Associates Consulting, Inc., Bedford, N.H. (603) 623-7373.

Enterprise '93. Boston, June 16-18 — Contact: Enterprise '93, Framingham, Mass. (508) 879-6700.

Mobile Communications Technologies, Applications and Regulations. Boston, June 17 — Contact: Mobile Computing Series, Boston University's Center for Information Technology, Tyngsboro, Mass. (508) 649-4200.

JUNE 20-JUNE 26

Conference of the Applied Dynamics International Users Society '93. Copper Mountain, Colo., June 20-23 — Contact: The Applied Dynamics International Users Society, Ann Arbor, Mich. (313) 973-1300.

Mobile Computing Forum. Dallas, June 21-23 — Contact: Daniel J. Edelman, Inc., Mountain View, Calif. (415) 968-4033.

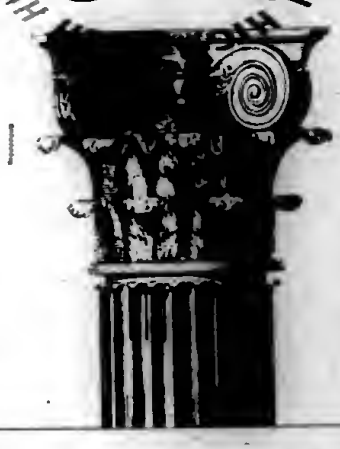
Network Security in the Open Environment (NETSEC). Washington, D.C., June 21-23 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2310.

James Martin World Seminar. Atlanta, June 21-25 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

M Technology Association Conference. Washington, D.C., June 21-25 — Contact: M Technology Association, Silver Spring, Md. (301) 431-4070.

Fourth Annual Worldwide Personal Communications ComForum. Alexandria, Va., June 22-24 — Contact: ComForum, Chicago, Ill. (312) 938-3500.

HIGH-TECH HIGH-TECH HIGH-TECH Heroes



On the next few pages, you'll meet the finalists for the fifth annual *Compulerworld* Smithsonian Awards. These finalists have taken the power of computers and applied that strength to help the disabled, explore human origins, fight disease and refine social services; in essence, they are improving the world in which we live.

In that sense, they are winners all.

Disabled but enabled

Multimedia lets handicapped kids access mainstream curricula

You take it for granted that you can read a book, take a class or write prose. But for Rob Park, a physically disabled 19-year-old, such activities are oatural only thanks to a collection of multimedia software tools.

Park, who has cerebral palsy, is one of numerous disabled students using Gateway programs from the Center for Applied Special Technology, Inc. (CAST) to help him participate in mainstream classrooms nsing the same curriculum as his peers.

"Most tools in the present classroom don't actually work for *everyone* in the classroom," says David H. Rose, executive director at CAST, a nonprofit organization in Peabody, Mass. "We want to take the existing curricula in the classroom and make it fully accessible to *all* kids, including those with disabilities."

EDUCATION & ACADEMIA

CAST's first program, Gateway Stories, is Hypercard-based and lets teacbers and therapists scan the text and images of printed books into an Apple Computer, Inc. Macintosh. The program enhances the books with speech and sound. Disabled students can use special ioput devices that enable them to read a book independently.

Another program, the Gateway Authoring System, is a blank template that lets studeots create their own stories and pictures through digitizing tools and scanners.

"It's a great tool for class participation," says Voski Chakirian-Sprague, an occupational therapist at Skyline Elementary School in Tacoma, Wash. "We scan journals and poems written by the regular students on the Gateway so [the disabled kids] can have access to everyone's work."

For someone like Park, who is legally blind and for whom use of the standard keyboard is difficult, the possibilities are endless. "I wouldn't be where I am today without CAST," he says. "It's allowed me to be independent." Park will be a freshman at the University of Massachusetts at Lowell this fall.

—Joyce Chutchian-Ferranti

▶Multimedia *helped Rob Park go to college*

In from the Outback

Satellite system delivers education, health care to Australian aborigines

Last fall, an elderly aborigine tribesman died at Yuendumu, a remote outreach of the Australian Outback. According to the dictates of tribal ritual, his goods were distributed among his kin so his spirit could live on.

A year ago, that oritical ceremony would have taken weeks or even months, much of it involving long, dry, dangerous treks across the Tanami Desert to reach relatives in other pockets of the vast but virtually anpopulated region. But this particular tribesman died during the first hours of a systems implementation three years in the making — so his spirit was rekindled within hours across a network.

MEDIA, ARTS & ENTERTAINMENT

Fifty years ago, says Terence Nickolls, chief executive officer of New South Wales-based videoteleconferencing systems supplier AAP Communications Services, the Anstralian government relocated the Tanami aboriginals to reservations in the Tanami Desert, where distances are measured in bundreds of thousands of kilometers. The move, Nickolls says, virtually stranded the tribes.

"We've had a satellite network for about 10 to 12 years, for the company's benefit," Nickolls

Outback, *page 88*

A groundbreaking group. The following list (continued on page 88 and 89) contains a brief description of all 50 *Computerworld* Smithsonian Award finalists. The 10 award winners will be announced today in Washington, D.C. See *Computerworld*'s June 14 issue for the winners.

BUSINESS & RELATED SERVICES

HumanWare, Inc. Accessibility modules for the visually impaired.

Postal Buddy Corp. Change-of-address kiosk for the U.S. Postal Service to eliminate incorrectly addressed mail.

McKesson Drug Co. Access portable data management system to track warehouse merchandise.

Electronic Retailing Systems International, Inc. Shelf-labeling system that ensures the price consumers see on the shelf is what they pay at the checkout counter.

Symbol Voice Computers, Inc. See story page 89.

EDUCATION & ACADEMIA

Stanford University Multimedia for students that enhances learning by encouraging curiosity.

Harvard Business School Publishing Corp. Electronic distribution of education materials for timely access to data.

Harvard University Office of Information Technology Custom textbook publishing to enhance learning.

Oklahoma State University Improves the quality of campus life through convenient transaction processing for dining, vending and laundry and access to automated teller machines and laboratories.

Center for Applied Special Technology See story for left.

ENVIRONMENT, ENERGY & AGRICULTURE

Australian National Parks and Wildlife A system for access to environmental data for better planning, decision-making.

Organization for Tropical Studies A database to speed species identification in the Costa Rican rain forest.

Pennsux Systems Corp. Weather-tracking system for more accurate, timely storm warnings.

BP Exploration A client/server system that assisted BP Arctic in plans emergency response applications for oil spills.

Vista Environmental Information, Inc. See story page 89.

Continued on page 89

Two PCMCIA 2.0 Slots, Type II (5mm) and Type "IV" (16mm): Twice the expandability. Easily accepts multiple cards including hard disk drives, modems and network adaptors.

LCD Status Bar: Delivers an instant read of the battery life remaining, power-saving mode, and a host of other key notebook settings.

Blazing 33MHz i486™SL: With built-in coprocessor support, delivers the ultimate in notebook processing power.

Some say the T4600 is Because in life, there

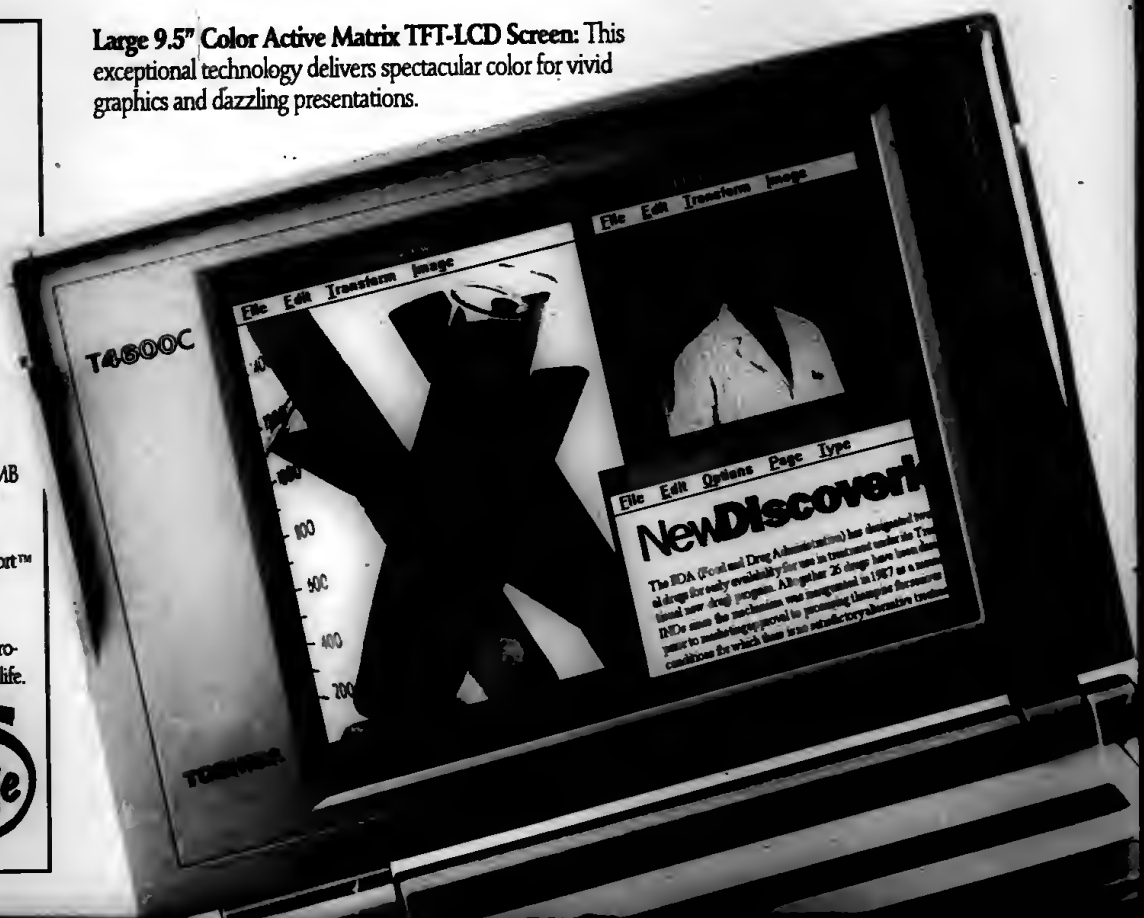
T4600C
- 9.5" color active matrix TFT-LCD screen
- 120/200/340MB HDD
- 6.9 lbs.
- NiMH battery

T4600
- 9.5" high-contrast, black and white LCD screen
- 120/200MB HDD
- 6.4 lbs.
- NiCd battery

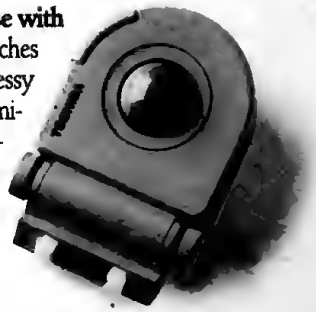
BOTH MODELS
- Intel 486SL/ 33MHz, 3.3 volt processor with 8K cache
- 4MB RAM expandable to 20MB
- Type II (5mm) and Type "IV" (16mm) PCMCIA slots
- BallPoint™ mouse w/QuickPort™
- Toshiba MaxTime™ Power Management system, and extensive 3.3v components provide industry-leading battery life.
- Pre-installed software: DOS 6.0, Windows® 3.1, and UltraFont.™

intel inside

Large 9.5" Color Active Matrix TFT-LCD Screen: This exceptional technology delivers spectacular color for vivid graphics and dazzling presentations.



BallPoint™ Mouse with QuickPort™: Attaches easily, without messy cords, for ergonomically ideal input—perfect for Windows® applications.



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Introducing the T4600 Series. Make no compromise.

Get the awesome power of a 33MHz i486™SL processor, and don't sacrifice battery life. Add a 9.5" color active matrix TFT-LCD screen, and access all 185,193 eye-popping VGA colors. Pack a massive 340MB hard drive and never have to leave a file at home. Get your hands on the BallPoint™ mouse, snap it into its QuickPort™, and never waste a moment or a motion.

Carry two slots for industry-standard PCMCIA cards—including one large enough for the new generation of removable hard drives—and take the next big step in peripherals. Glance at the QuickRead LCD status icon bar for an instant read of battery life, power management, keyboard settings, and more. This is no time for compromise. This is the time to get your hands on the T4600 Series.

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FINANCE, INSURANCE & REAL ESTATE

GOVERNMENT & NONPROFIT

MANUFACTURING

In from the outback

CONTINUED FROM PAGE 85

says. "I started to wonder, why couldn't this technology be used to bring communication to the Tanami people?" The answer to that question is ConferNet — a flexible, multisite network that weds satellite telecommunications equipment to low data-rate digital videoconferencing and delivers the mix through a custom-designed, Microsoft Corp. Windows-based graphical user interface.

Since it went live last November, ConferNet has overcome 120-degree temperatures, dust and distances of many hundreds of miles to the nearest service center to bring the estimated 3,200-person Tanami community out of exile. The network has been the means of delivering interactive childhood and adult education, emergency health diagnoses and government support programs.

And make no mistake about it: The Tanami people are, indeed, putting themselves on ConferNet, Nickolls says. They worked out the game plan for linking their far-flung community, he says. They also manage it: Users at each site control scheduling and call reservations via iconic commands.

The exercise of this control, he says, is "a convincing display of self-determination."

In the near future, ConferNet will give its users an entree into Australian media and information activities. Plans are afoot for international display and sale of Tanami paintings and crafts via ConferNet, says business adviser Peter Toyne.

First implemented at six sites, it will be extended to some 30 in the next few years, he says.

The network's user base is also expanding. The Chinese government has expressed interest in harnessing, for its own long distances, the technology that brought the Outback back in. — *Neil Margolis*

Holocaust memories

New museum's multimedia display vividly portrays Jews' plight

MEDIA, ARTS & ENTERTAINMENT

More than half a century after the Holocaust, thousands of its victims "live" in timeless electronic space in a small computer room in Washington, D.C.

The new U.S. Holocaust Memorial Museum features a unique multimedia exhibit that preserves and digitally presents the faces, voices, songs and stories of men, women, children and nations in exhaustive, often painful detail.

Through a sophisticated blend of full-motion video, sound, text, photographs, maps and graphics, visitors at The Wexler Learning Center construct a customized electronic "tour" based on their own interests.

Using an electronic identification card, visitors can also "meet" a real person of their own age and gender from the past and track that person's fate through the Holocaust years between 1933 and 1949.

The exhibit, funded by the U.S. government, is a product of nearly four years of technological, scholastic innovation. Headed by Yechiam Halevy, an executive on leave from an Israeli database software firm, a team of nearly 50 technologists and researchers have labored since 1989 to collect and organize vast amounts of Holocaust data and create what he says is the world's largest networked multimedia system.

Visitors interact with 24 IBM 486-based PCs equipped with headphones and 19-in., Video Graphics Array touch-screen monitors. These workstations are located at the center and scattered about the museum.

Compressed digital information is delivered simultaneously to all users via a 150K-byte Novell, Inc. NetWare network and a superserver with 60G bytes of storage from NetFrame Systems, Inc. in Milpitas, Calif.

Although the museum has been open only since April 22, about 5,000 people visit each day, according to Halevy. Many seem moved by the digital encounter.

"My children didn't live in the same generation that I did, so for them it was just absolutely astounding," says Dorothy Hicks, 50, a nursing director in Woodbridge, Va. "We feel the same thing: How could we have ever let this happen?"

During the next year, Halevy, who serves as director of information systems, says museum staffers plan to focus on producing a related CD-ROM and allowing network access from remote locations.

"Chapter two is actually the educational message of this museum," Halevy says, "which is much more important than the physical walls." — *Joseph Maglitta*

▶ The Holocaust museum *preserves faces, voices and stories*

No bones about it

Fossil dating system helps solve puzzles about the Earth, our origins

SCIENCE

Scientists at the Institute of Human Origins (IHO) have used a computerized fossil dating system to prove that the genus *Homo* — our immediate ancestor — walked the rugged terrain of Kenya more than 2.4 million years ago, not 1.9 million years ago as was widely accepted in anthropology circles until recently.

Berkeley, Calif.-based IHO is applying its specialized automated dating system to studies of human origins and the Earth's history, solving questions about ourselves and our world faster and far more painlessly than ever before.

IHO programmers and researchers assembled existing commercial software into an automated system for tracking and evaluating animal remains, fossils and other data and samples. The system also uses specially built software bridges to control scientific devices such as laser beams and mass spectrometers, which judge a fossil's age.

Scientists, such as Myron Best, a geology professor at Brigham Young University, can now focus on understanding the data collected instead of spending hours in the laboratory manually pushing buttons, turning knobs and twisting valves. Previously, with manual methods, scientists could process just one sample each day; now they can work on 30 to 40.

Even as volume soars, precision has increased a hundredfold, says Alan Deino, an IHO geologist and principal programmer for the automated dating system. Less time spent on dating tasks means more time studying data "and upping the amount of organized data we are able to study," Deino says.

For example, because he can now process more samples, Deino can apply the principles of statistics to his data. That improves accuracy because researchers can more readily pick out "bad" data and anomalies, he explains.

One of the most important automation by-products is what IHO researchers call "telechronology," the process of dating specimens remotely via data uploaded over phone lines and controlled with special software bridges that activate spectometers and other devices.

An anthropologist digging for *Homo sapiens* remains in East Africa, for example, can key into a laptop information on the location and condition of fossil finds, then send the data to Apple Computer, Inc. Macintoshes at IHO.

Although the system is housed in Berkeley, laboratories worldwide can share it. Key components are Apple's Hypercard application, FileMaker Pro, a PC-based database from Claris Corp., and Procite, a PC-based bibliography organizer from Personal Bibliographic Services, Inc. — *Kim S. Nash*

ILLUSTRATIONS THIS PAGE BY STEPHANIE FAUCHER

Tumors in trouble

Image fusing improves cancer detection

For one 63-year-old woman with an abdominal tumor, techniques developed at the New York University Medical Center may have prolonged her life.

The center is improving cancer detection with its image fusion techniques, which, since 1986, have enabled doctors to diagnose tumors that may go undetected by more conventional imaging approaches. The female cancer patient is among the more than 40 people who have been diagnosed using these techniques, says Dr. Marilyn Noz, professor of radiology at the center.

NYU's image fusion combines two types of images: structural and functional. Structural, or anatomic, images by themselves offer clear anatomic detail but don't distinguish when an enlarged lymph node or abnormal bulk of tissue may not actually represent a cancerous tumor.

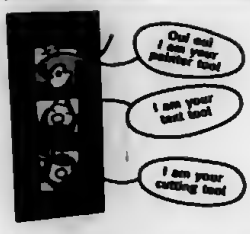
Functional images alone show the cancer's functions, including metabolic rate, tumor antigen concentration and chemical content. But these images often lack the anatomical landmarks that let doctors identify the precise location of the active portion of the cancer.

Merging the two images enables doctors to identify both the activity and the location of tumors for treatment.

Without image fusion techniques, "doctors have to literally hold up one film and put another on the viewbox and see if they can line them up," says Dr. Barry Wesseis, a professor and chief of the medical physics section at the Department of Radiation Oncology and Biophysics at George Washington University Medical Center.

—Melinda-Carol Ballou

▶**Image fusion** *pinpoints 'hot spots' to find a tumor*



Talking Windows

Software lets blind users access GUI apps

While the industry's transition to graphical user interfaces is a godsend to the DOS-wary, visual iconic displays present a considerable obstacle for users who cannot see.

Last June, Syntha-Voice Computers, Inc., a seven-employee firm in Hamilton, Ontario, introduced software, called Slimware Window Bridge, that enables blind and print-handicapped users to access Microsoft Corp. Windows applications through traditional Braille displays and speech synthesizers.

David Kostyshyn, the sight-impaired president of Syntha-Voice and part of Slimware's design team, says the group used artificial intelligence and pattern analysis to identify and translate Windows' elements.

As the user moves the mouse, the software interprets the graphical text and translates it to the speech synthesizer or Braille display.

As users move the mouse, they hear a "blip" for every pixel moved. The tone of the blip raises or lowers to correspond to the direction in which the pointer is moving.

The Massachusetts Commission for the Blind in Boston is using the program to retain jobs in Windows environments for hundreds of blind people, according to Joe Lazzaro, adaptive technology coordinator at the commission.

Lazzaro, a blind beta-test user of the software, says, "It's pretty cool and very usable. It's a blessing in that it will create a situation in which other companies are going to copy it, resulting in more Windows programs for the blind and print-handicapped."

—Stephen P. Klett Jr.

You're fingered

Fingerprint system stops welfare double-dipping in L.A. County

The government is not typically known for being able to reduce costs *and* provide better social services to qualified needy people. The Los Angeles Department of Public Social Service (DPSS), however, is bucking government stereotypes and proving that, indeed, it can do good while cutting costs.

Tom Monahan

Over the years, the department has lost millions of dollars paying out fraudulent claims. In 1991, things started to turn around with the implementation of an Automated Fingerprint Image Reporting and Match (AFIRM) system.

The $9.6 million client/server system lets clerks at the 14 county DPSS offices scan in applicants' fingerprints to find out if they are receiving aid from another office. After scanning, the fingerprint images are sent to a central database to check for matching fingerprints. The process takes about five minutes, compared with the months it used to take for manual searches. Accuracy is 95%.

"We catch approximately 30 people a month who are trying to double-dip and beat the system," says Lisa Nunez, division chief at the Computer Services Division of the DPSS.

DPSS officials, however, point out that a match does not lead to criminal prosecution. "We just deny them aid. Technically, they have not committed a crime," says Eddy Tanaka, director at the DPSS.

The system went live in June 1991. In the six months following, it helped detect 3,011 cases of existing fraud out of the 70,000 people on file, saving the county $5.4 million. By October 1995, AFIRM is expected to save the county $20 million. *—Stefanie McCann*

Waste not

Hazardous waste database tracks problem spots

There are about 2.2 million hazardous waste sites in the U.S. Some 700 governmental agencies track data on these sites, but the data has been hard to coordinate.

Until now. A PC-based neural network running a database developed by Vista Environmental Information, Inc. in San Diego tracks some 9.9 million records, which have data on 2.2 million individual problem spots.

Illustrations top and left by Lisel Shapiro

Individuals and businesses can get data that might help when purchasing property or conducting business.

Vista upgrades its files to show cleaned-up sites as reported. It uses both geographic information systems to map environmental hazards and the U.S. Census Bureau's database, which has street-by-street data. *—Michael Fitzgerald*

At INTEROP this August, you can prepare for the one constant in networking

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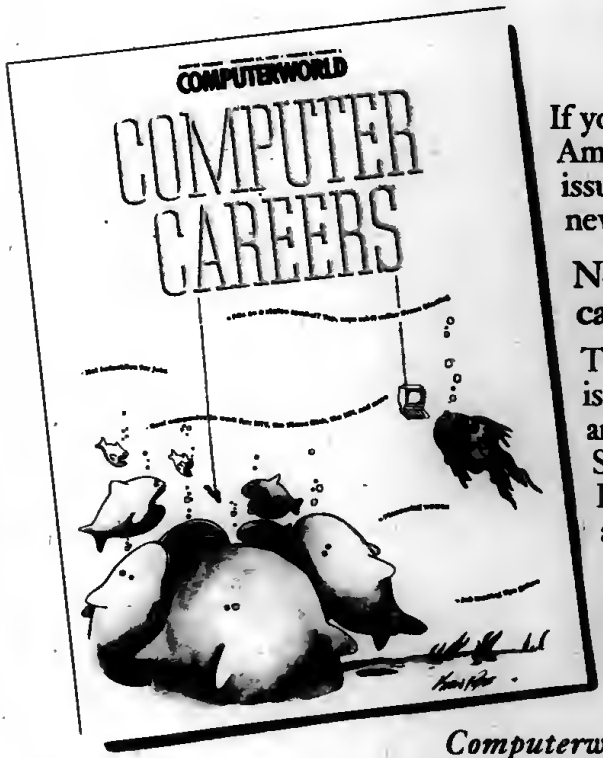

Issue Date: October 31, 1993
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Planned Editorial Features:
(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

Flexibility key to migration success

By Irma McCaffrey

It wouldn't be so bad if everything worked according to plan, but that rarely happens — especially when you're standing knee-deep in a major migration effort.

We were a start-up insurance company that had acquired a large base of policies that were maintained and issued by a company in Illinois. To handle this acquisition, we needed to move data processing to a mainframe vendor in Pennsylvania and our printing functions to a print vendor in Massachusetts.

Our three main objectives were to simultaneously migrate the print capability and the software and data processing; to convert from impact to laser printer technology; and to establish a quality control process.

Hurdles

The cutoff date from the Illinois service was firm — we had about eight months to complete the project.

The first step was to establish data links among the three locations. We hired a consultant because the staff expertise at each site was different.

To ensure the viability of the plan, we ran a pilot using one insurance form. As the project progressed, however, it was apparent that the communications links were undersized — we had underestimated the volume of data we needed to send, and the telecommunications setup needed to be more flexible.

The second hurdle was converting to laser printer technology. Fifty percent of the 45 forms produced in Illinois came from impact printers on multiple-part preprinted forms, whereas the Massachusetts vendor could handle only laser printing. To come up with a laser version of the preprinted forms, we decided to customize individual copies and do a unique sort on the print jobs prior to printing. This allowed us to mail the printed form with all the copies as a single unit as we had done previously.

The third hurdle was to limit the mail-merge rejection rate of the automatic mail-processing system. This was vital because once printed, the forms had to be processed through the print vendor's automatic folding, inserting and mailing operations.

Success factor

Overall, the success of an integration project ultimately reflects the quality of the team. Ours consisted of information systems members as well as an array of nontechnical people who understood the process of issuing a policy.

Once our team bought into the project, they produced results beyond my expectations. Do not be afraid to compromise or to seek alternatives during the project. Flexibility is the key to success.

McCaffrey is vice president of the Microcomputers Association New England Chapter and a technical services specialist at Arbella Mutual Insurance Co. in Quincy, Mass.

Pulling it together

GOAL: To help Arbella Mutual relocate print, mail and distribution functions

HURDLES:
- Establish data links among all four locations.
- Convert from impact to laser technology.
- Implement quality control of printed forms.

SKILLS NEEDED:
- An understanding of mainframes, minicomputers and PCs — how they work and interact with one another.
- Knowledge of impact print vs. laser technologies.
- Solid understanding of data communications.
- Familiarity with the insurance industry, forms they use and so on.
- Good interpersonal skills.

DO:
- Ask yourself if the project is feasible. If unsure, try a pilot.
- Have the right resources and time to complete the project.
- Have a good understanding of the technology involved.
- Have a precise goal. Vague concepts will cause trouble.
- Identify which goals are flexible and which are not.

DON'T:
- Oversimplify anything, especially technical aspects. In this case problems were caused by the conversion from impact to laser printer technology, the volume of data involved and staffing required.

CW Chart, Janell Genovese

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Database administrators: Not just for mainframes anymore

Jobs in

By Leslie Goff

Tell someone you're looking for a database administrator and chances are his response will be "Mainframe or PC?" As distributed databases proliferate, however, the skills of a classic database administrator in the systems department are gradually merging with those of the PC programmer who works with relational databases and tackles problems such as data backup and integrity in a client/server environment.

Consequently, want ads for positions under the heading "Database administrator" are not as plentiful as those for PC specialists who have experience with Oracle Corp.'s Oracle, Sybase, Inc.'s Sybase, Nantucket Corp.'s Clipper and other PC-based relational databases.

> "A lot of us are a cross between a systems person and an applications developer."
>
> —*Clayton Clendinen, Orlando Utilities Commission*

"With the client/server mood right now, a database administrator really needs to understand the workstation area and not just the mainframe," notes Clayton Clendinen, database administrator at the Orlando Utilities Commission in Orlando, Fla. "A lot of us are a cross between a systems person and an applications developer, and a lot would have the tendency to be mainframe-oriented."

Database administrators oversee the storage and distribution of corporate data. What was once a behind-the-scenes position with responsibility for maintaining a database in a single environment is becoming a more visible position responsible for ensuring the database security and integrity on a variety of platforms.

The systems-oriented database administrator working with DB2, Adabas and the like isn't going away, but may not go much farther without acquiring an in-depth knowledge of client/server — particularly how data is transmitted across a network and how distributed databases have changed the way companies use information (see chart).

Unlearning curve

Learning database administration in a distributed context also entails "unlearning" a lot of what you've learned on the mainframe, says Paul Olson, a consultant at Database Decisions, Inc., a consulting firm in Newton, Mass.

"You're coming at the data from a different perspective [in a distributed environment], and that's a difficult thing for people to adjust to," he says.

For instance, whereas a mainframe database is all character-based, a distributed PC database can have a graphical user interface that enables a database administrator to add user-oriented features such as pushbuttons or menus.

Skills to hone

- Object-oriented programming using languages such as C++ and Microsoft Corp.'s Visual Basic; CASE tools such as Powersoft Corp.'s PowerBuilder; and tools from KnowledgeWare, Inc. and Bachman Information Systems, Inc.
- Experience with a relational database with embedded SQL from vendors such as Oracle, Sybase, The ASK Group, Inc., Informix Software, Inc. and Microsoft's SQL Server.
- Mainframe database skills, most commonly DB2, as well as an overall understanding of mainframe environment.
- Thorough knowledge of client/server environments, including how data is transmitted across a network, data backup and recovery, data integrity, data structures, data modeling and security issues.

Median pay scale

	Database Administration Manager	Senior Database Analyst/ Administrator
Northeast	$67,100	
Midwest	$62,800	
Southeast	$60,000	
Southwest	$61,800	
West Coast	$57,800	

Source: National Computer Associates, San Diego

"A user is going to look at the database and say 'Make this as easy for me as possible,' " Olson says. "But what the user sees as simple is difficult to implement."

Richard Wonder, national director of the information systems division of Robert Half International, Inc. in San Francisco, says any database administrator looking to advance his career should scout companies that have embraced the Unix platform and are using a relational database with embedded SQL in a client/server environment. Companies that are re-engineering and moving in that direction are also a good choice.

Finding the right position remains tough, even for an experienced database administrator, in a market that remains soft. "For survival, I have to learn what I can about distributed databases, networking and Unix," says an administrator in the Midwest. "It may not mean more pay, but it would ensure my longevity. It's a long-term survival tactic."

Goff is a New York-based free-lance writer.

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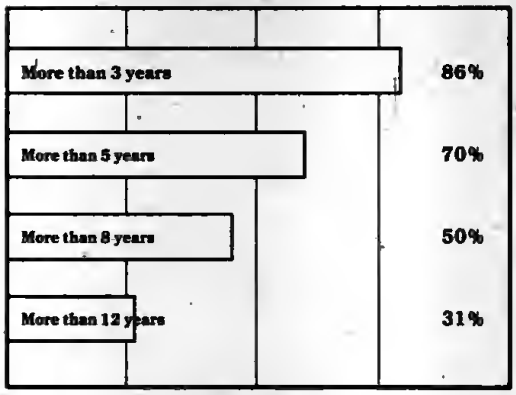

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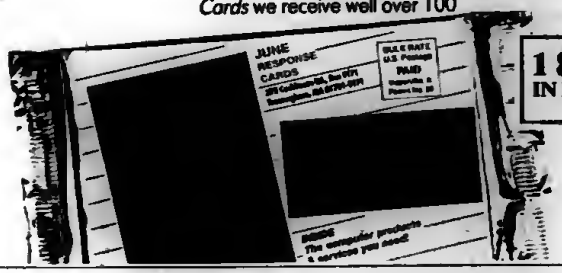

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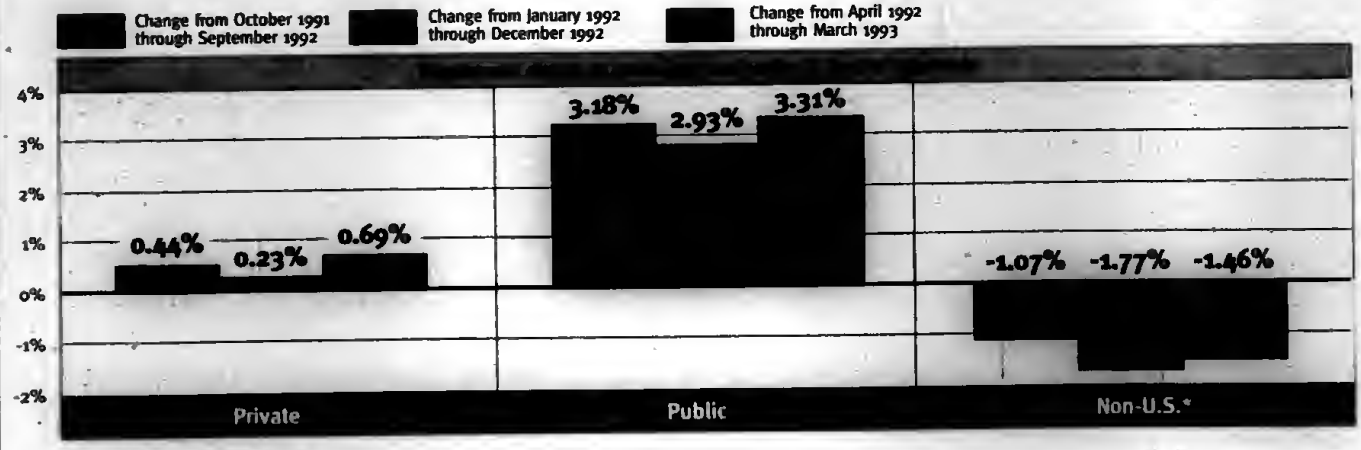

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Don't get stung by software contracts

By Naomi C. Mirlocca and Nathan D. Hollander

In today's ultra-competitive environment, you've got to protect yourself more than ever from vendors trying to make an extra buck. This is especially true when it comes to signing standard software contracts, which can actually be a very lucrative means for software vendors to collect additional revenue.

Let's start by saying that the standard contract *in no way protects the buyer.* In fact, some clauses seek to *make money* for the vendor. It's these clauses that vendors are free to search out and strictly enforce when they need the extra revenue. It's these clauses that you've got to recognize and modify before you sign.

Your first reaction might be, "We've got a good, trusting relationship with our software vendor. This doesn't apply to me." But what happens if the vendor is bought out by a company with less scruples? You'll wish you had looked more closely at that contract. The following are problematic clauses you should watch for and some suggestions on how to modify them to your advantage.

1 **Software cannot be transferred.** Generally, software licenses are written for a specific CPU at a specific installation site. If your company moves the computer to a different site, the vendor can request a new license fee. This usually is an issue when companies are sold because the vendor sees it as a transfer of software.
Fix: Modify this clause so the software license can be transferred if the company, division or computer is sold. License the program to the computer so it can be moved from site to site.

2 **Limited software use.** This prevents a company from running a service bureau (i.e. processing another company's payroll using the software) without the vendor receiving additional royalties. This clause also prevents a company from running any of its other divisions' data on the software as well, which is especially troublesome if less than 50% of the division is owned by the company.
Fix: Modify this clause to allow any data owned by the company or affiliated companies to be run using the software, even if the affiliate is only partially owned.

3 **Software license cannot be disclosed or distributed to anyone other than the licensee's authorized employees.** Under this clause, you cannot hire consultants to make modifications to the software.
Fix: Modify this agreement to include consultants retained by your company.

4 **Additional fee for upgrades.** If you upgrade to a larger system, the vendor may hit you with an upgrade fee. This is the difference between the published software price and what you originally paid for it.
Fix: Eliminate the fee altogether if the reason for upgrading to a larger system does not relate to this application.

5 **The vendor's only responsibility is to use its best efforts, consistent with industry standards.** This exempts the vendor from any liability associated with the problems caused by software bugs.
Fix: Modify this clause so the vendor is responsible for damages resulting from errors caused when using the software, time spent finding the problem and monetary loss suffered by a customer or any related party.

6 **Changes to the program become the vendor's property.**
Fix: Any modifications you make are your property. The vendor should not be allowed to copy the code that is custom-written for you without paying a royalty fee.

7 **Limited number of backup copies.** A vendor usually limits you to one archival copy for backup and disaster recovery purposes of the software. The second copy is limited to the installation site or a second site that is owned or controlled by your company.
Fix: Modify this agreement so you are allowed two backup copies — one at your primary site and a second at the disaster recovery site that may be owned and/or operated by a third party.

8 **There is only a limited time during which a second copy of the program can be run for testing.**
Fix: This should not be allowed to stay in the contract. There is no set time limit that the copy of the program may be used for testing.

9 **A 30-day notice of intention from the vendor not to renew the maintenance agreement.**
Fix: Modify this clause so the vendor must give one to two years' notice of its intention to drop support of the product.

10 **Materials and documentation cannot be copied.**
Fix: Insist that you be permitted to copy all of the manuals for internal use.

Clauses to add in

- A limitation on the amount that maintenance fees can be increased.
- If there is a new release in a certain number of months, you will receive the new version at no cost or at a reduced cost.

Mirlocca is a senior consultant and Hollander is a practice leader at CSC Partners, a management and IS consulting firm in Bridgewater, N.J.

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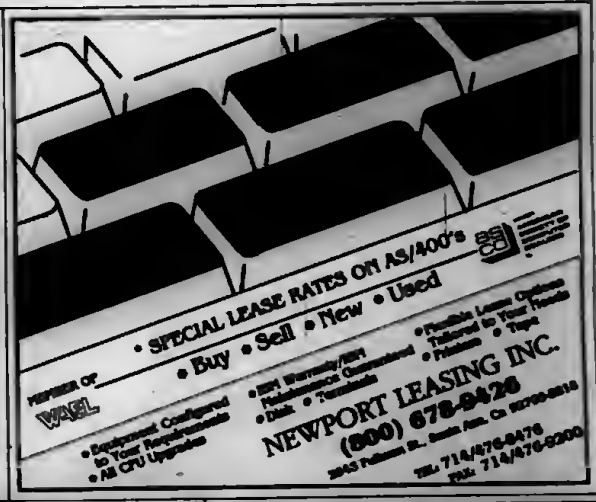

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Inquiries regarding the RFP should be addressed to:

Mr. Stan Johnson
Director
Management
Information Systems
Port of Los Angeles
P.O. Box 151
425 So. Palos Verdes Street
San Pedro, CA 90733-0151
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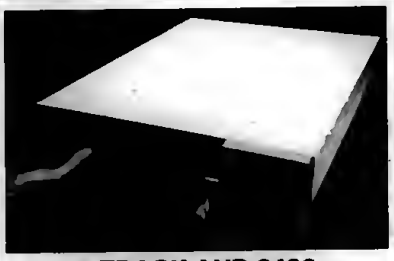

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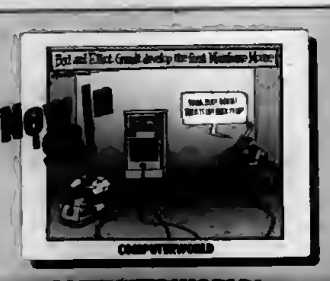

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Percent

Cisco Connection	27.7	QMS Inc.	-34.7
Cognos Logic	19.0	Commodore Int'l. (L)	-15.8
Shoes of the Day	12.1	Microcom Inc.	-13.5
Chips and Technologies	12.9	Data Switch Corp.	-12.0
Bolt, Beranek & Newman	12.5	Advanced Logic Research	-11.8
Picturetel Corp	12.5	Cross/Comm	-11.8
3Com	12.0	Network Computing Devices	-11.4
Ross Systems	12.0	Wordstar	-10.7

Dollar

Raytheon Defense Corp.	7.50	Synoptics Communications	-12.50
Motorola Inc. (N)	5.63	QMS Inc.	-5.13
Matsushita Electronics	4.75	Cross/Comm	-4.00
Texas Instruments (N)	1.88	Sybase Corp.	-2.75
MCI Communications Corp. (N)	5.38	Parametric Software Corp.	-2.00
Cognos Logic	3.25	Wellfleet Communications	-2.00
Hewlett-Packard Co. (N)	3.13	Platinum Software	-2.00
Policy Management Sys.	2.88	Parametric Technology	-2.38

[redacted]

Great expectations

Investors might think twice about buying a technology stock that is already trading at or near its all-time high.

But that high-water mark is not necessarily a cap for a stock's growth. The key issue, analysts agreed, is whether a company's earnings show continued momentum and whether those earnings can keep pace with Wall Street's expectations.

Newbridge Networks Corp. (NNCXF) illustrated that point last Wednesday. Already flying high after zooming up more than 400% in 1992, Newbridge issues rose 6½ on Wednesday as the company beat analysts' expectations for fourth-quarter earnings per share. Newbridge easily eclipsed its previous high and closed at 75¾.

However, higher share price typically goes hand-in-hand with higher Wall Street forecasts for future earnings. Stocks that achieve premium values have an increased downside risk, not only if the company reports a difficult quarter but also if analysts' perceptions cause it to drop its expectations back down.

Robert Wilkes, communications analyst at Brown Brothers Harriman & Co., pointed to the decline of 3Com Corp. (COMS) as an example of that risk. 3Com sank 11½ on May 28 and continued to fall last week as Wall Street analysts cautioned against an unpleasant earnings surprise.

Part of the challenge for Newbridge, then, is for the company's management to guard against unrealistic future earnings estimates on Wall Street, according to Bob Kim, research analyst at SG Warburg & Co. Like other companies, Newbridge will supply market analysts with guidance on fixing a reasonable target for the next quarter's earnings.

"Even at its current premium, Kim rates Newbridge stock a Buy. "As long as they meet or slightly beat expectations, they'll grow," he said.

Other computer stocks that may have room to rise, despite trading near their highs, include the following:

Hewlett-Packard Co. (HWP)

HP has traded in the mid-80s, nearly hitting a high of 89 recently. Shao Wang, an analyst at Smith Barney, Harris Upham & Co., said HP has aggressively contained expenses while demand for its new products across many lines has remained strong.

EMC Corp. (EMC)

Smith Barney analyst Barry Bosak said he expects EMC's 1993 earnings per share to be more than twice 1992's total. EMC finished Wednesday just off its 52-week high of 37.

—Derek Slater

Exch	52-Week Range			June 4 3 PM	We Net Change	We Pct Change
COMMUNICATIONS EQUIPMENT & SERVICES						
OTC	40.00	9.63	3 COM Corp.	26.50	-0.75	-2.8
NYS	80.23	61.75	American Info Techs Corp.	73.50	1.50	1.9
NYS	62.38	40.63	AT&T	61.50	0.38	0.8
OTC	3.50	0.75	Astel Communication Corp	2.63	-0.19	-48.2
OTC	54.50	50.25	Banyan Systems Inc.	55.25	-0.88	-5.4
NYS	56.75	43.25	Bell Atlantic Corp	55.00	1.13	2.1
NYS	37.50	46.75	Bellsouth Corp	53.00	1.13	2.2
NYS	6.75	3.63	Bolt, Beranek & Newman	1.63	0.63	12.5
OTC	18.50	9.50	Brooktrout Technology	12.00	0.00	0.0
NYS	107.00	44.00	Cabletron Systems	99.00	-2.25	-2.2
OTC	22.75	3.75	Centigram Communications (N)	21.00	1.00	5.0
OTC	43.50	12.75	Chipcom Corp	36.63	-2.38	-6.1
OTC	30.25	21.38	Cisco Systems Inc.	31.75	-1.25	-2.6
OTC	18.75	5.50	Compression Labs Inc	11.00	0.88	7.2
OTC	36.00	11.00	CrossComm	30.00	-4.00	-11.9
OTC	4.63	0.88	Data Switch Corp	2.75	-0.50	-12.0
NYS	22.13	12.50	Digital Comm. Assoc.	12.88	0.00	0.0
OTC	12.75	4.50	Digital Systems Int'l, Inc.	1.25	-0.25	-4.5
OTC	46.00	4.25	DSC Communications	43.75	0.75	1.7
OTC	9.50	4.75	Fibronix Int'l, Inc.	6.00	-0.38	-5.9
OTC	24.75	8.75	Fluency Corp.	12.25	-0.75	-5.8
OTC	4.38	1.50	Gandalf Technologies Inc.	3.00	-0.13	-4.0
OTC	2.08	0.69	Gaytheny Communications	1.13	0.00	0.0
NYS	15.63	2.88	General Datacomm Inds (N)	15.63	1.13	7.8
ASE	3.75	2.00	Go Video	2.63	0.19	7.7
NYS	37.75	30.63	GTE Corp.	35.00	-0.13	-0.4
NYS	84.88	62.50	ITT Corp. (N)	83.50	0.00	0.0
OTC	33.38	10.75	MCI Communications Corp. (N)	55.50	3.50	6.5
OTC	11.25	2.25	Microcom Inc	4.00	-0.63	-13.5
OTC	24.25	6.75	Netrue Corp.	3.00	-0.25	-4.8
OTC	19.00	8.75	Network Computing Devices	9.75	-1.25	-11.4
NYS	15.00	3.38	Network Equipment Tech.	9.00	0.88	10.8
OTC	22.75	8.00	Network General	9.50	-0.11	-1.3
OTC	15.75	8.50	Network Systems Corp.	9.00	-0.38	-4.0
OTC	75.50	15.00	Newbridge Networks Corp.	75.50	7.50	11.0
NYS	46.00	30.50	Northern Telecom Ltd.	35.75	0.50	1.1
OTC	35.23	22.50	Novell Inc.	28.00	0.38	1.4
NYS	92.30	76.00	Wyner Corp.	85.00	1.88	2.3
OTC	30.00	14.50	Octel Communications Corp.	22.25	0.25	1.1
OTC	6.13	3.50	Penril Data Comm Networks	4.25	-0.13	-2.9
OTC	34.75	10.25	Picturetel Corp.	22.50	2.50	12.5
OTC	13.23	4.63	Protand Inc.	6.13	0.63	11.4
NYS	13.75	14.25	Scientific Atlanta Inc. (N)	33.75	2.00	6.3
NYS	40.75	25.69	Southwestern Bell Corp	38.50	0.50	1.0
NYS	33.25	21.00	Sprint Corp	50.88	1.63	5.0
OTC	27.00	10.50	Stardard Microsystems Corp	16.50	0.00	0.0
OTC	18.50	6.88	Stratacom Inc.	14.23	0.00	0.0
OTC	128.25	27.75	Synoptics Communications	106.30	-12.50	-10.5
OTC	7.15	4.15	Telebit Corp.	4.13	0.00	0.0
OTC	9.50	2.13	Telemetics Int'l, Inc.	6.63	-0.13	-3.9
OTC	25.30	13.50	US Robotics	21.30	2.25	-9.5
NYS	45.00	34.88	U S West Inc. (N)	44.13	1.11	2.6
OTC	55.50	12.00	Wellfleet Communications	45.25	-2.50	-5.2
OTC	14.00	7.00	Xircom	16.00	1.50	12.0
COMPUTER SYSTEMS						
OTC	6.25	2.50	Advanced Logic Research	4.19	-0.50	11.8
OTC	65.25	41.50	Apple Computer Inc.	55.00	-1.75	-3.1
OTC	24.25	11.25	AST Research Inc.	15.50	-1.00	-6.1
NYS	12.13	2.63	Commodore Int'l, (L)	2.88	-1.00	-25.8
NYS	60.38	23.13	Compaq Computer Corp. (N)	58.75	2.13	3.7
OTC	49.88	13.00	Dell Computer Corp.	22.50	1.38	-5.8
NYS	88.88	50.23	Hewlett Packard Co. (N)	86.63	3.13	3.7
NYS	37.63	14.11	Silicon Graphics (N)	36.25	0.25	0.7
OTC	41.00	22.50	Sun Microsystems Inc.	32.00	1.88	6.2
NYS	32.38	22.25	Tandy Corp (N)	30.88	-0.25	-0.8
OTC	11.00	2.75	Zeos International Ltd.	6.13	-0.13	-2.9
COMPUTERS						
ASE	18.38	4.63	Amdahl Corp.	5.50	0.00	0.0
NYS	9.75	4.25	Convex Computer	8.38	-0.25	-2.8
OTC	4.13	1.88	Cray Computer	3.38	0.63	22.7
NYS	32.88	19.00	Cray Research Inc.	28.25	-0.88	-3.0
NYS	11.88	7.13	Data General Corp	10.75	-0.63	-5.5
NYS	49.25	50.58	Digital Equipment Corp.	43.50	-0.63	-1.4
NYS	38.63	26.75	Harris Corp.	37.25	1.75	4.9
NYS	100.58	43.88	IBM	33.75	0.88	1.7
OTC	22.00	5.50	Kendall Square Research	17.00	0.50	3.0
NYS	127.50	83.00	Matsushita Electronics	124.00	4.75	4.0
OTC	23.75	8.25	Netframe	15.88	-0.58	-2.3
OTC	15.50	9.25	Parallan Computer	14.00	-0.25	-1.8
OTC	19.00	6.00	Pyramid Technology (N)	10.25	-0.13	-0.7
OTC	24.00	13.50	Sequent Computer Sys.	19.50	0.13	0.6
OTC	14.23	1.50	Sequoia Systems Inc.	2.00	0.00	0.0
NYS	46.50	29.50	Stratus Computer Inc.	31.63	-2.75	-8.0
NYS	16.88	9.88	Tandem Computers Inc.	12.88	0.00	0.0
OTC	19.00	10.63	TeleCard Systems	18.13	1.63	9.8
NYS	11.88	7.75	Unisys Corp.	11.88	0.30	4.4
SOFTWARE						
OTC	71.50	25.25	Adobe Systems Inc.	65.50	-0.88	-1.3
OTC	20.75	10.25	Aldus Corp	16.13	0.38	2.6
OTC	14.25	5.50	American Software Inc	7.63	-0.38	-4.7
OTC	28.13	9.75	Ask Computer Systems	12.25	0.75	6.3
OTC	56.50	32.75	Autodesk Inc.	49.88	0.50	0.8
OTC	11.00	2.30	Bachman Info. Systems	3.13	0.00	0.0
OTC	43.00	32.00	BGS Systems Inc.	33.00	0.25	0.8
OTC	84.13	37.25	BMC Software Inc.	51.13	1.38	2.8
OTC	28.25	17.00	Boole & Babbage	23.50	0.25	1.1
OTC	52.00	17.50	Borland Int'l, Inc.	24.00	-1.25	-5.0
OTC	5.88	3.00	CE Software	3.63	0.50	11.5
ASE	30.25	6.25	Cheyenne Software Inc.	27.15	-0.13	-0.3
OTC	19.50	8.25	ChipSoft	10.75	-1.25	-10.4
OTC	9.63	3.61	Cognos Inc.	6.63	0.13	1.9
NYS	31.50	10.88	Computer Associates	27.25	-0.88	-3.1
OTC	12.38	2.75	Computervision Corp	6.88	0.00	0.0
OTC	34.25	19.25	Compuware Corp	22.25	-1.50	-6.3
OTC	14.75	5.75	Comshare Inc.	7.25	0.00	0.0
OTC	17.25	10.75	Cotel Corp.	15.63	0.38	2.5
OTC	27.25	5.25	Easel Corp	6.00	-0.50	-5.9
OTC	25.25	12.00	4th Dimension	20.00	-0.25	-1.2
OTC	19.50	6.00	Frame Technology	6.63	-0.50	-5.4
OTC	20.75	10.00	Group I Software	10.00	0.00	0.0
OTC	35.25	19.25	Gupta	19.25	-0.50	-2.5
OTC	8.75	3.50	Hogan Systems Inc.	7.88	0.00	0.0
OTC	25.25	11.25	IMRS	18.25	-0.25	-1.4
OTC	36.00	18.30	Information Resources	34.25	-0.38	-1.1
OTC	49.75	12.13	Informix Corp.	43.75	0.63	1.4
OTC	16.75	9.58	Intergraph Corp.	9.38	-0.50	-5.1
OTC	13.63	6.88	Interleaf Inc.	8.63	-0.50	-5.5
OTC	18.00	6.50	Intersolv Inc. (L)	6.75	-0.30	-6.9
OTC	16.00	7.25	Knowledgeware Inc.	9.75	-0.50	-4.9
OTC	54.75	26.00	Legato Corp.	28.25	-0.75	-2.6
OTC	36.75	14.25	Lotus Development	36.13	-0.50	-1.1
OTC	23.00	7.75	MathSoft	7.75	-0.50	-6.1
OTC	23.25	5.25	McAfee Associates	6.25	-0.30	-7.4
OTC	11.63	1.88	Meca Software	10.00	0.63	6.1
OTC	13.50	5.25	Mentor Graphics	10.50	-0.88	-7.8
OTC	46.00	37.25	Micro Focus	34.00	-0.88	-2.5
OTC	18.75	6.50	Microgate Inc	5.75	-0.63	-9.8
OTC	96.00	65.50	Microsoft Corp	94.00	1.75	1.9
OTC	44.63	14.00	Oracle Corp. (N)	44.50	2.38	5.7
NYS	34.25	15.38	Parametric Technology	30.63	-2.50	-7.2
OTC	40.50	22.50	Peoplesoft	33.00	0.25	0.8
OTC	7.13	3.50	Phoenix Technologies	5.00	0.00	0.0
OTC	40.00	24.88	Powersoft	24.88	-2.13	-7.9
OTC	41.30	17.00	Platinum Software	23.00	-2.50	-9.1
OTC	25.00	31.25	Platinum Technology	13.63	-1.50	-9.2
OTC	61.50	29.00	Progress Software Corp.	30.30	-2.50	-6.4
OTC	15.00	2.50	Quarterdeck Office Sys.	3.31	0.00	0.0
OTC	24.75	11.75	Rainbow Technologies Inc. (N)	23.75	1.30	6.7
OTC	14.00	4.00	Rasterops	9.63	0.94	10.8
OTC	15.25	3.63	Ross Systems	12.88	1.50	12.0
OTC	27.25	8.50	Sapiens Intl. Corp. N.V.	22.88	2.50	11.6
OTC	11.00	6.75	Software Publishing Corp	8.13	0.63	8.3
OTC	11.75	2.00	Software Toolworks Inc. (N)	11.13	0.23	2.3
OTC	4.13	0.75	Spinnaker Software	1.50	0.00	4.7
NYS	12.75	3.25	State of the Art	10.25	1.50	17.1
NYS	24.63	13.75	Sterling Software Inc.	18.75	-0.75	-3.8
OTC	21.50	8.00	Struct. Dynamics Research	18.50	-1.13	-5.7
OTC	72.75	21.00	Sybase Inc. (N)	66.25	-1.00	-1.4
OTC	42.75	5.88	Symantec Corp	17.63	0.88	5.2
NYS	12.30	5.25	Systems Center Inc.	10.13	-0.38	-3.6
OTC	23.50	10.00	System Software Assoc.	19.25	0.63	3.4
OTC	6.30	2.30	Transic Corp.	5.63	0.00	0.0
OTC	22.75	9.13	ViewLogic Systems	38.30	-1.25	-8.3
OTC	23.50	6.75	Walker Interactive Systems	7.50	0.25	3.4
OTC	5.19	1.38	Wordstar	1.58	-0.19	-10.2
SEMICONDUCTORS						
NYS	12.88	7.50	Advanced Micro Devices	28.13	0.00	0.0
NYS	21.50	9.00	Analog Devices Inc.	19.50	-0.63	-3.1
OTC	24.38	2.63	Atmel Corp (N)	23.88	0.63	2.7
OTC	8.50	2.75	Chips and Technologies	4.38	0.50	12.9
OTC	39.75	13.00	Cirrus Logic	20.38	3.25	19.0
NYS	14.25	7.38	Cypress Semiconductor Corp	13.88	0.50	3.7
NYS	16.13	6.00	Dallas Semiconductor	15.13	0.13	0.9
OTC	121.25	67.75	Intel Corp	112.38	1.88	1.7
NYS	14.13	6.88	LSI Logic Corp	13.75	0.73	5.8
OTC	33.25	13.75	Lattice Semiconductor	29.00	-0.25	-0.9
NYS	31.25	13.13	Micron Technology (N)	31.13	1.38	4.6
NYS	86.25	37.13	Motorola Inc. (N)	86.25	5.63	7.0
NYS	15.63	8.50	National Semiconductor (N)	15.63	1.13	7.8
OTC	17.25	8.50	Sierra Semiconductor	7.75	-0.75	-8.8
OTC	42.25	22.25	SynOptics	40.25	0.13	0.3
NYS	68.63	32.25	Texas Instruments (N)	68.63	1.88	6.0
OTC	6.88	0.00	VLSI Technology	8.00	0.11	1.6
OTC	9.50	2.13	Wyse (N)	9.13	0.00	0.0
ASE	9.63	4.13	Western Digital Corp	6.88	-0.13	-2.5
OTC	38.50	14.50	Xilinx	36.00	0.00	0.0
OTC	31.50	12.88	Zilog Inc. (N)	31.50	0.25	0.8
SEMICONDUCTOR EQUIPMENT						
OTC	38.73	11.75	American Power Conversion	37.50	2.00	5.6
OTC	20.16	13.84	Banctec Inc.	19.00	0.50	2.7
OTC	18.00	6.25	Cambex Corp.	7.38	0.13	1.7
ASE	8.50	6.50	Communtronics Corp	7.25	0.13	1.8
NYS	25.50	11.25	Conner Peripherals (L)	11.50	-0.50	-3.2
OTC	38.50	10.75	Creative Technologies Inc.	32.50	0.75	2.4
OTC	30.75	14.25	Data Race Inc.	22.00	6.00	0.0
ASE	17.00	4.75	Dataram Corp.	10.50	0.13	1.2
OTC	37.00	10.00	EMC Corp	35.00	1.88	5.3
OTC	10.50	3.50	Exabyte Corp.	7.25	0.25	3.6
OTC	19.00	15.25	Evans & Sutherland	16.88	0.13	0.7
OTC	33.00	12.00	Exabyte	12.50	-0.50	-3.8
OTC	26.00	7.00	Intelligent Info. Systems	21.00	-0.29	-1.3
OTC	6.88	1.88	Iomega Corp	4.25	-0.13	-2.9
OTC	21.25	5.75	IPL Systems Inc.	7.25	-0.23	-3.3
OTC	24.00	10.75	Komag Inc.	20.00	1.00	1.3
OTC	19.63	1.88	Maxtor Corp	6.88	-0.25	-3.3
OTC	11.25	5.75	Micropolis Corp	7.25	0.00	0.0
NYS	136.00	94.13	3M Corp	115.38	2.25	2.0
OTC	7.75	4.00	Printronix Inc.	6.75	-0.13	-1.8
OTC	17.25	6.88	QMS Inc.	9.63	-5.13	-34.7
OTC	17.88	11.63	Quantum Corp.	12.38	-0.13	-1.0
OTC	12.75	3.38	Rhomus Inc.	3.44	-0.06	-1.9
NYS	16.50	2.50	Recognition Equipment	15.50	0.25	1.6
OTC	13.88	4.50	Rexon Inc.	6.88	-0.13	-2.5
OTC	22.50	12.00	Seagate Technology	15.75	-0.50	-3.1
NYS	45.00	18.00	Storage Technology	39.50	0.75	1.9
NYS	27.88	14.88	Tektronix Inc.	23.38	1.13	3.1
NYS	88.88	84.75	Xerox Corp	75.13	-0.83	-0.8
MISCELLANEOUS						
OTC	21.75	14.23	American Mgmt. Systems	18.38	-0.50	-2.6
NYS	4.75	2.75	Arkcom Inc.	3.00	0.00	0.0
OTC	55.75	16.25	Analysys Int'l	27.00	0.25	0.9
NYS	56.13	38.75	Auto Data Processing	49.25	0.63	1.3
NYS	17.25	11.22	Ceridian Corp.	14.38	-0.38	-2.5
NYS	17.50	13.13	Comshare Inc.	14.25	-0.13	-0.9
OTC	8.75	4.38	Computer Horizons	7.25	-0.25	-3.3
NYS	80.50	37.00	Computer Sciences	75.25	0.13	0.2
NYS	9.25	6.50	Computer Task Group	7.00	-0.15	-1.8
NYS	40.50	22.00	Compusa Inc.	33.00	-0.38	-1.1
OTC	14.75	6.00	Corporate Software	11.75	-0.50	-4.1
OTC	24.25	7.38	Egghead Discount Software	8.38	-0.13	-1.5
NYS	31.88	25.25	General Motors E (EDS)	31.13	-0.63	-2.0
OTC	25.50	9.25	Imacon Corp	18.50	0.75	4.2
OTC	15.50	6.25	Intelligent Electronics	13.13	-0.63	-4.3
OTC	13.00	6.63	Meinsl	12.63	0.13	1.0
NYS	16.25	3.75	Microage Inc. (N)	15.25	-0.50	-3.2
OTC	63.00	21.75	Paychex	41.25	1.00	2.5
NYS	87.25	32.88	Policy Management Sys.	37.75	2.88	8.2
NYS	38.50	16.81	Revlon/Ron and Reynolds (N)	17.75	0.83	1.7
OTC	33.00	22.00	SEI Corp. (N)	32.25	0.00	0.0
OTC	24.38	16.88	Shared Medical Systems	12.25	0.13	0.8
OTC	13.75	5.75	SHL Systemhouse	11.50	-0.50	-4.2
OTC	29.25	18.25	Software Spectrum Inc.	26.75	-0.25	-0.9
OTC	33.75	22.50	Sungard Data Systems (N)	31.00	1.63	5.5
NYS	4.38	1.13	Ultimate Corp.	1.88	-0.13	-3.1

KEY: (N) = New annual high reached in period (L) = New annual low reached in period

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In Brief

Piracy losses charted

Software piracy is costing publishers and distributors as much as $12 billion annually, according to the Business Software Alliance. The Asian market continues to be the largest threat with more than $5.4 billion in losses estimated in 1992. European pirates absconded with $4.5 billion in software last year, while U.S. bandits pilfered $1.9 billion worth of packages in 1992, the alliance estimated.

Cray gets funding

Beleaguered Cray Computer Corp. in Colorado Springs, will soon receive an equity infusion of about $26 million. The company sold some common shares to institutional and private investors. The funding, which is expected to be set by June 11, will enable the supercomputer company to continue operating for the next year, analysts said. Cray, a spin-off from Cray Research, Inc., has hit development snags with its Cray-3 supercomputer, which caused some prospects to withhold orders.

Phoenix acquisition

Phoenix Technologies Ltd. in Norwood, Mass., has acquired Strategic Research Institute K.K., a system software engineering firm in Tokyo. The acquisition will make it easier for Phoenix to serve its Japanese OEM customers, which include Fujitsu Ltd., Hitachi Ltd. and NEC Ltd.

SHORT TAKES Pyramid Technology Corp. in San Jose, Calif., has promoted Chief Operating Officer John Chen to president and named him to the board of directors.... Sungard Data Systems, Inc. in Wayne, Pa., has acquired Information Systems of America, Inc., a provider of accounting and investor support software to the insurance industry.

Apple: No trial by jury

Hopes higher court will see merit in its infringement suit

By James Daly
SAN FRANCISCO

■ Faced with an unsympathetic judge and impending defeat, Apple Computer, Inc. last week abandoned its effort to get a jury trial in its copyright infringement case against Microsoft Corp. and Hewlett-Packard Co. It now plans to move the case to what it hopes is a more charitable appeals court.

After five years and millions of dollars in legal fees and just four weeks short of a jury trial, Apple attorneys last week indicated they would not contest the remaining issues in the suit. Judge Vaughan Walker summarily ruled in favor of Microsoft and HP.

Apple sued Microsoft and HP in March 1988, charging that certain visual elements in the Macintosh, including overlapping windows and the manipulation of icons, were not covered by the scope of a 1985 licensing agreement Apple inked with Microsoft. That pact was used in the development of Microsoft's Windows 2.03 and HP's New Wave, which is based on Windows.

Judge Walker, who has continually winnowed down the scope of the case, last month dealt Apple a severe blow when he ruled that the firm would have to prove that the visual displays on the Macintosh were "virtually identical" to the Microsoft and HP software. Apple had argued for an easier "substantial similarity" standard.

Apple attorneys said Judge Walker's guidelines missed the point of their argument. "The District Court was wrong in treating Apple's distinctive copyrighted graphical interface as a 'purely functional arrangement,'" said Apple general counsel Edward Stead.

Experts said Apple's legal maneuvering is not atypical. "Why go through the effort and expense when their chances of convincing a jury, using Judge Walker's guidelines were negligible?" asked Ronald Abramson, an attorney and member of the intellectual property group at the New York law firm Hughes Hubbard & Reed. "Either side would have appealed."

An Apple spokeswoman said the company hopes an appeals judge will apply the broader substantial similarity infringement standard. Abramson said the appeals process could take two years or more.

Attorneys said Apple may not fare much better in the Court of Appeal for the Ninth Circuit, a moderate bench not known for taking a hardline approach to copyright infringement suits. "I don't think they're necessarily going to get a friendlier forum," said Richard Bernacchi, who specializes in intellectual property issues for the Los Angeles law firm Irell and Manella.

So suit-ed

It's been a long, strange trip for participants in the case:

March 1988: Apple sues Microsoft and HP, charging that certain Macintosh elements were not covered by a 1985 licensing pact.

March 1991: Macintosh's visual elements are ruled original and not part of 1985 pact.

June 1991: Apple adds Windows 3.0 to complaint.

March 1992: Apple estimates $6.05 billion in lost revenues.

April 1992: Judge Walker decides that many of the Macintosh screen graphics were either not protected or come under original technology pact. Narrows core of suit from nearly 300 original points of contention to 20.

May 1992: Jury trial set for June 22.

June 1992: Judge dismisses all charges against Microsoft and HP. Apple seeks appeal.

DRAM shortage hits PCs

By Michael Fitzgerald
ATLANTA

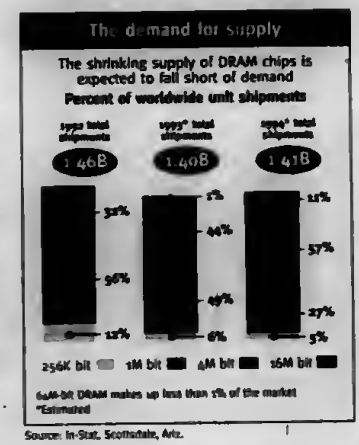
Vendors contend that dynamic random access memory chips are in short supply, and that shortage could affect users' ability to get DRAM upgrades or even entire systems. But the situation is not considered a replay of the 1988 shortages.

"There is a definite DRAM shortage emerging because there is a lot of demand," said Safi Qureshey, president and chief executive officer of AST Research, Inc., at a Comdex/Spring '93 panel. Qureshey said one irony is that "the biggest users of DRAMs are Nintendo and Sega, so we are competing with our kids for DRAMs."

Analysts said smaller computer vendors, which typically buy from the spot market, may have trouble getting DRAM chips. But large players such as IBM PC Co., Compaq Computer Corp. and Toshiba America Information Systems, Inc. typically purchase DRAMs on long-term contracts and are not likely to see their supply or pricing affected.

In addition, Qureshey's kids analogy is only partially true, said Dean McCarron, an analyst at MicroDesign Resources, Inc. McCarron said the games use pseudostatic RAM, a form of DRAM with embedded logic controls, while most PCs use DRAM without the logic controls. McCarron said pseudo-DRAM shows up mostly in portables, such as Apple Computer, Inc.'s PowerBook or Hewlett-Packard Co.'s 95LX and 100LX.

McCarron agreed that DRAM makers cannot meet current demand. The situation will probably last through the end of the third quarter, when new capacity is scheduled to come on-line, he added.



Source: In-Stat, Scottsdale, Ariz.

"We're not going to see the kind of stuff we saw in '88, though," McCarron said. DRAM vendors at that time failed to see the market shift from 256K bits to 1M bit. The resulting shortage of 1M-bit chips drove DRAM prices through the roof.

Some observers blamed the International Trade Commission's spat with Korean DRAM makers, which were accused of dumping chips on the U.S. market and hit with a hefty tariff [CW, Nov. 9, 1992]. While the commission has lifted the tariff, supplies have not improved.

Mike Moshayedi, president of fast-growing RAM upgrade vendor Simple Technologies, Inc., said the IBMs and Compaqs of the world actually exacerbated current DRAM problems by placing large orders when the tariff rulings first went out last year. Moshayedi said, "We thought the situation would get better after the tariff relief, but it hasn't."

But Jim McDonnell, a marketing manager at HP's PC division, said, "They're blaming the ITC, but it really seems like it's an issue of poor forecasting. Worldwide, DRAM demand is up through the roof."

McDonnell said HP is currently meeting demand, and he said HP could find itself shipping systems configured with less memory than customers would like if the shortage continues. McDonnell said HP expects the situation to ease by the end of the third quarter.

Senior editor Michael Vizard contributed to this story.

Wysiwyg

Dances with GUIs

Actor Kevin Costner appeared in an early Apple II TV ad aimed at stealing customers away from IBM

Gwendolen Cates/Outline

Humbling Thought

Only **36%** of 1,977 Americans surveyed think the office computer is a necessity, although it does beat the VCR

Which of the following do you think is a necessity?

Automobiles	85%
Clothes washer	82%
TV set	74%
Home air-conditioning	47%
Microwave oven	44%
Car air-conditioning	42%
Office computer	36%
Second automobile	27%
Dishwasher	24%
Office fax machine	23%
VCR	18%
Home computer	11%
Cellular phone	5%

Source: Roper Organization (Report 93-1)

Quips & Quotes

"Pentium's not this magical elixir that everyone's going to drink of. It's just sand, damn it."

— *Jeffrey Henning, analyst, BIS Strategic Decisions*

Word Play

Algorithm: When the vice president dances

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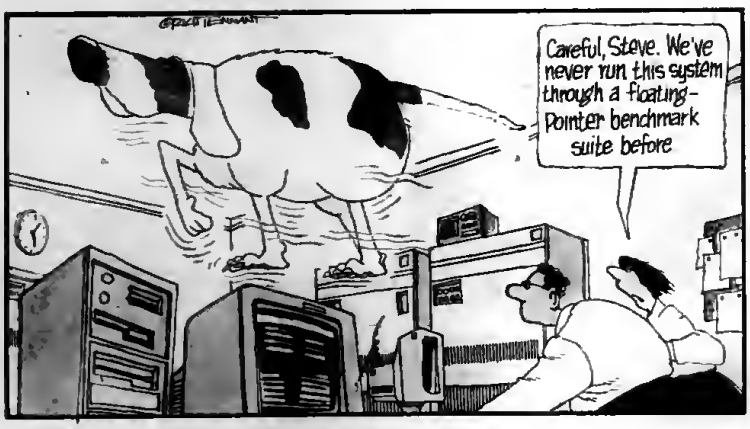
The Fifth Wave *by* Rich Tennant



Inside Lines

[redacted] Event was interest: IBM. does not [redacted] client/server platforms.

Come into my parlor

Hewlett-Packard is expected next week to announce a deal with Synon, Inc., a software development company in Larkspur, Calif., that will enable AS/400 users to migrate their applications to HP's 9000 series of Unix workstations. This follows HP's efforts to attract users from other platforms, such as an alliance formed earlier this year with Wang to migrate its users over to the 9000.

Getting the lead out

HP is blaming the longer-than-planned lead times for its PA-RISC workstations, introduced last fall, on problems with getting the 100-MHz PA-7100 microprocessor to sit properly in its packaging. Deliveries remain stretched out six to eight weeks on the low-end HP 9000 Model 715 and eight to 12 weeks on Models 735 and 755. HP is trying to get the lead times down to less than four weeks during the summer, describing the hoped-for improvement as "imminent."

The object of its desire . . .

The Object Management Group (OMG) will demonstrate the fruit of its Request For Information for new Common Object Request Broker Architecture (Corba) services later this month at Object World. Eighteen vendors — including IBM, DEC and HP — have apparently dropped competitive offerings in favor of an entry by Sun for this particular piece of the OMG standard. Dubbed Joint Object Services, the Sun offering will handle several low-level services for Corba to help manage the storage and retrieval of objects.

Notes mail lives

Contrary to a report published last week, work has *not* been halted on the mail portion of Lotus' Notes software, according to a spokesperson. Lotus added new mail features — including text searching, macro support and directory improvement — to the recently released Notes 3.0 and is working on additional features, such as native X.400 and pager support, for upcoming releases of Notes.

Better late than early?

Cisco confirmed a report that its routers may support IBM's APPN Network Node a few months earlier than planned. Still, Cisco said it does not expect major user demand for Network Node until the second half of 1994 — its original shipment time frame. The accelerated rollout will be made possible by 3Com's "tremendous work making the protocol portable to a real-time environment like ours" rather than a Unix environment, a Cisco spokesman said.

Word on the street is that the Common Open Software Environment (COSE) coalition for a unified Unix look and feel has an update in store for this week's Exhibition show in San Jose, Calif. Items said to be on the docket include some, or all, of the following: a) A COSE update, b) A new COSE member and c) A white paper describing the COSE "process" and pitfalls. DEC, meanwhile, is trying to get accepted into the COSE specification. It is offering to add the Habitat software layer that sits on top of DEC OSF/1 and adds compliance to Unix System V and Berkeley Unix to the COSE spec. DEC is pushing its ACA Services implementation of the OMG's Corba spec as well. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 70537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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You say: "Wang can image-enable any environment. IBM. DEC. HP. UNIX. Windows. Anybody."

They say (after a pause): "No kidding?"

John L Sullivan
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